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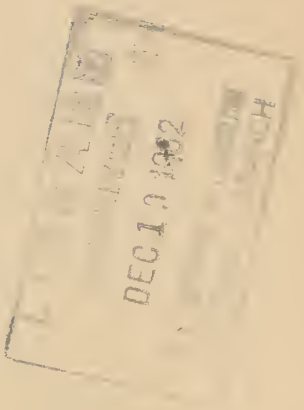

Proceedings of

NUTRITION EDUCATION CONFERENCE

JANUARY 29-31, 1962
WASHINGTON, D.C.

THEME:

Improving Nutrition Education for Children

UNITED STATES DEPARTMENT OF AGRICULTURE Miscellaneous Publication No. 913

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January 29-31, 1962

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PREFACE

The Nutrition Education Conference held in Washington, D.C., January 29-31, 1962 considered current nutritional problems and how they could be met by more effective educational programs. The general theme was "Improving Nutrition Education for Children."

The 1962 conference was the fourth Government-sponsored national nutrition conference held in Washington. The first, held in 1941, was geared to plans for national defense, and the second, in 1952, had for its purpose reviewing progress and strengthening existing programs. The 1957 conference, like the one in 1962, focused on nutrition education.

Grateful acknowledgement is given to all who participated in the conference and shared their experiences, their knowledge, and their ideas, particularly to those persons who prepared papers. Personal satisfaction that comes from being part of an endeavor which works to improve the health and well being of children is undoubtedly the real reward for time and energy put forth. Judging by the number of enthusiastic participants there were many who experienced this feeling of satisfaction.

It is difficult to assess the value of any conference but it is hoped that the effects of this conference will be felt in every community in the land through continuing efforts to improve the nutrition of the American people. Nutrition education is a continuing process.

NUTRITION EDUCATION

A *Dr. Berenice Mallory, presiding at the closing luncheon*

B *Dr. Horace Sipple, Miss Mary Egan, Dr. Neige Todhunter*

C *Miss Eunice Heywood, Dr. Eloise Cofer, Dr. Keith Tyler*

D *Mrs. Helen Turner, Miss Lucile Bridges, Dr. Ruth Leverton*

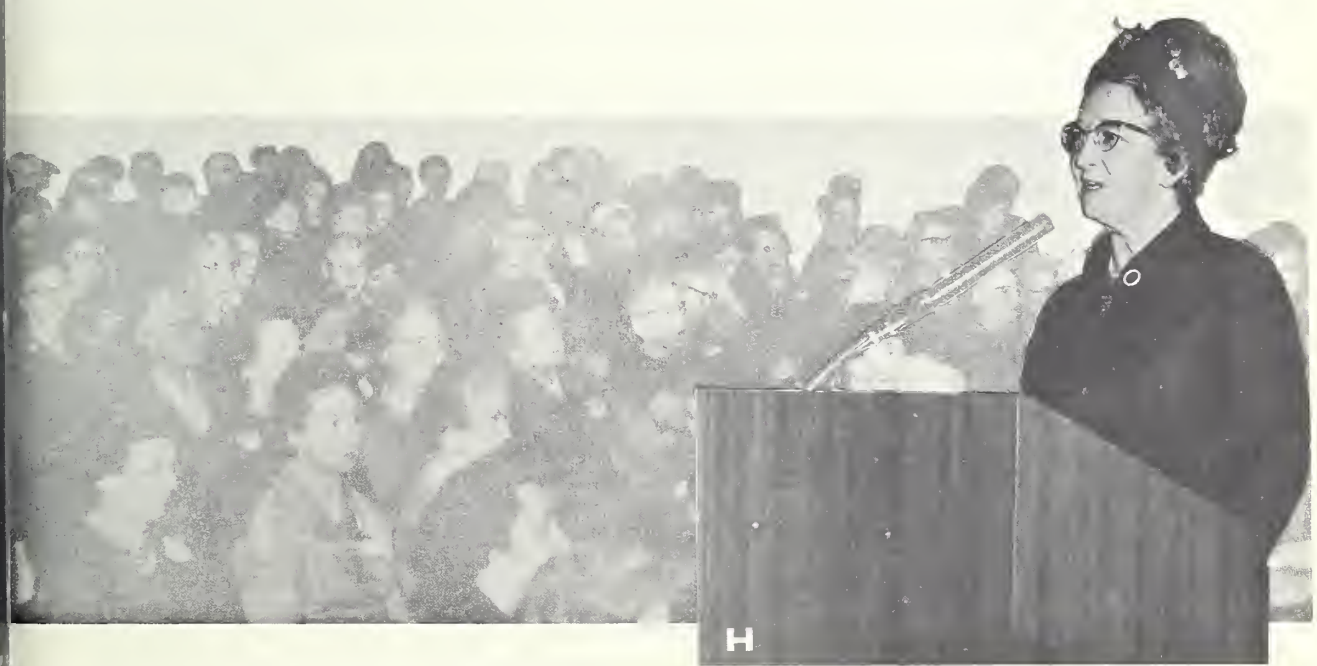
E *Miss Ruth Stief, Dr. Winona Morgan, Dr. Oral L. Kline*

NFERENCE - January 29-31, 1962

F *Dr. Esther Phipard, Dr. Hazel Stiebeling, Dr. Pauline Stitt*

G *Miss Edna Amidon, Dr. Carl Sebelius*

H *Miss Lucile Bridges*



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NUTRITION EDUCATION CONFERENCE

INTRODUCTION

The Nutrition Education Conference held in Washington, January 29-31, 1962 was sponsored jointly by the United States Department of Agriculture through its Nutrition Programs Service, Agricultural Research Service and the Interagency Committee on Nutrition Education and School Lunch. Plans for the conference were developed by representatives of the sponsoring agencies. Early deliberations were concerned with determining the need for a conference at this time, the scope, and emphasis. To bring in other viewpoints, a small advisory group of educators and nutritionists from outside the federal government met with the sponsors' planning committee for one day.

It was agreed that although progress had been made in the United States on public awareness of the relationship of health and nutrition, much still needed to be done to bring food consumption habits more in line with current knowledge of nutrition. As evidence indicates that food habits are formed early in life, it was decided to focus the 1962 conference on improving nutrition education of children with the ultimate objective of establishing good food habits that will persist into adulthood. The stated objectives were as follows:

1. To consider one of today's major nutrition problems--children's food habits.
2. To present the problem and to explore known contributing factors.
3. To consider coordinated, comprehensive educational programs to help children achieve and maintain good food habits.
4. To provide an opportunity for participants to discuss the contribution they might make to such programs.

Participants were chosen from groups in all sections of the country--voluntary and private organizations as well as Government agencies--that directly or indirectly are in a position to influence children's food habits. Accordingly, invitations were sent to State and city nutrition committees, selected representatives of Extension Service, public health nutritionists, college teachers of foods and nutrition, and education, elementary and secondary school teachers, health educators, food trade associations, professional and service organizations, United Nations and Government agencies, and certain research-related groups. Nearly 300 persons attended the conference.

The program was planned to provide background information on the nutritional needs of children at different stages of development, the present situation in regard to the diet and nutritional health of American children, some of the factors affecting children's food habits, and how children learn. The program also included a panel discussion of opportunities for furthering nutrition education through health agencies, schools, extension services, food industry programs, and community activities.

Everyone attending the conference was invited to participate in two meetings of small heterogeneous discussion groups. These discussion meetings gave all participants an opportunity to contribute to the identification of problems related to improving food habits and to suggest practical approaches for their solution. The discussion leaders and recorders, who were drawn from agencies represented on the Interagency Committee on Nutrition Education and School Lunch, prepared brief summaries of problems and solutions. Highlights of these reports were made available to the speaker at the closing luncheon meeting of the conference for her talk, "Implications of the Conference--A Look Ahead."

Evaluation of the conference to measure participant satisfaction as well as the effectiveness of meetings was provided for during the conference and plans were made for followup evaluation during the year.

Following the close of the conference an ad hoc committee, selected from the participants, met with members of the program committee to discuss ideas for follow-up activities and programs. A brief report is given on page .

The speakers at the conference were drawn from a variety of disciplines concerned directly or indirectly with child nutrition and therefore, brought several different viewpoints before the conference. The papers which make up the proceedings of this conference are given in whole or in part on the pages that follow. The papers present the speakers' views and not necessarily those of the sponsoring agencies.

WELCOME

Hazel K. Stiebeling, Ph.D., Deputy Administrator
Agricultural Research Service, U. S. Department of Agriculture
Washington, D. C.

It is a high privilege to welcome so select and distinguished a group of persons to this, the fourth national nutrition conference, called to consider how to improve nutrition education for children.

The first national nutrition conference met here 20 years ago at the call of the President of the United States. As I look at this youthful audience, I feel sure that most of you were then in school or were just starting your careers. I am told, however, that some 20 to 25 of you attended the 1941 conference. I would like to recognize the presence of four persons--persons who in 1941 were members of the Federal Interagency Nutrition Advisory Committee. They are: M. L. Wilson, W. H. Sebrell, Edna Amidon, Helen Stacey. These persons and you other veterans of the 1941 conference are living examples of the durable quality that years of good nutrition can impart.

The 1941 conference was an epoch-making event for nutrition in this country. It came at a critical time. We had but recently emerged from a serious economic depression during which one-third of the families had diets which we classed as poor, nutritionally speaking. We were on the brink of war. Indeed, during the course of the sessions, the President proclaimed a state of unlimited national emergency. We needed all the physical and emotional strength and stability we could muster, including that which good nutrition could impart.

The conference was a large gathering with some 900 participants, representing all segments of our national life. And as to content of the discussions, listen to some key words of program agenda: Human welfare; national defense; agricultural policy; foreign policy; labor's stake; consumer protection; research; education; public health; community planning; food distribution; food processing; group food service. That conference, while affirming the importance of nutrition to national welfare, recognized the complexity of the problem of nutritional improvement. It offered 12 specific lines of approach, most of which are as valid today as when they were prepared, even though much progress has been made along every line.

Research, education, and practical programs in nutrition today have a stature that owes much to the impetus they received from the 1941 conference and the recommendations for action made then.

Ten years ago, in 1952, the second national nutrition conference was convened, and the progress of the 1940's was reviewed. Much progress had been made, especially in diets of families in the lowest third of our income distribution. This progress was attributable to a continuing abundant supply of a wide assortment of food, to increased consumer purchasing, to enrichment of certain foods, to nutrition education. But participants at the 1952 meeting agreed that acceleration of progress would hinge on greater ability to motivate the public to translate knowledge about nutrition into behavior patterns for eating. Hence, the next conference, held 5 years ago, in 1957, had as its objective "to increase the effectiveness of nutrition education."

Gratifying as results have been following this 1957 conference in the use of new approaches, including the greater use of mass media, and in more coordinated and cooperative work, those responsible for

planning this 1962 conference felt that emphasis again should be placed on education. An advisory committee was enlisted to help in this planning, bringing to bear the viewpoints of other nutritionists and educators. The decision was made to focus attention at this conference on children--improving the food habits of today's children who will be tomorrow's adults.

You scientists and educators, representatives of public or private groups concerned with betterment of nutrition--you from across the length and breadth of this country are here to examine our present position, our resources of knowledge, and the thrust needed in the years just ahead in order to accomplish our stated objectives. This conference can be as epoch making as was the first national nutrition conference. You can make significant history.

The entire Nation awaits your recommendations--your suggestions of how and why as well as when and what we might do, working independently and jointly, to meet the challenge of attaining better nutrition in this country.

On behalf of the sponsoring agencies, may I say "Welcome to Washington, and best wishes for a fruitful exchange of ideas."

THE USEFULNESS OF GROWTH AND DEVELOPMENT EXPECTANCIES AS FEEDING GUIDES--A PEDIATRIC VIEWPOINT

Pauline G. Stitt, M.D.
Chief, Home Medical Service, Massachusetts Memorial Hospitals, and
Associate Professor of Preventive Medicine and Pediatrics
Boston University School of Medicine
Boston, Mass.

I am honored to participate in a conference held under auspices for which I have so much esteem, and on a subject for which I have such concern and interest.

Although not a nutritionist nor a worker in the field of growth and development, I am a pediatrician, teaching preventive medicine and pediatrics to senior medical students. This work, and earlier experiences with parents and with professional colleagues of several different professions, have filled my heart with earnestness on this subject, and have convinced me that even a little awareness of reasonable expectations of growth and development is useful to anyone wishing to feed children on a rational basis, and that an age-specific approach to childhood makes related teaching meaningful.

Accordingly, I hope today to present a pediatric viewpoint of the usefulness of growth and development expectancies as feeding guides.

The Most Frequent Pediatric Question

As a beginning, I call attention to the most frequent question a pediatrician asks when consulted on a pediatric problem. There are, of course, countless questions that pediatricians ask, but one question is heard more than any other. This is true whether the pediatrician is responding to a parent's phone call or is in consultation with professional colleagues. It is probably the commonest question of the chief of a pediatric service querying his Residents, or of the pediatric teacher talking to medical students. This oft repeated question is: "How old is the child?"

"How old is the child?" This question is as basic to pediatric services--and education--as the season of the year is to a gardener, or the hour and time of year to an astronomer. In essence, rational child care is age-specific service, and, even then, "age" is not so much how old the child is in hours, weeks, months, or years, as how old he is in growth and development.

The more we use facts about the natural characteristics of children at various ages and stages, the better we can tailor-make our services to be maximally useful to children at specific points in their growth and development. When we do this, we get results for our efforts, and a little effort goes a long way. For every age period presents its own characteristics--its own

special opportunities, as well as its special risk, jeopardy or vulnerability. Just as a gardener knows not only of the hazards of spring frosts and floods but also of the unique planting opportunities presented, the pediatrician oriented to growth and development recognizes "seasons of childhood" and begins to discern their nature and what they demand of anyone trying to serve children.

When we apply these ideas to nutrition education, we know that one of our goals is to assure that care and feeding of children accommodates to the advancing age of a child, and in accordance with generally recognized requirements. We know that these requirements can be anticipated, and therefore we can give ourselves and others the benefits of "anticipatory guidance" on meeting the needs of children.

For example, we know that children eat eagerly and gain rapidly during the first year, then usually slow down in growth (and of course in food intake) around the first birthday. The inexperienced parent or an uninformed professional worker could misinterpret these appropriate changes as "poor" appetite and press on with distasteful food-forcing. An awareness of childhood's growth and development expectancies can give all concerned anticipatory guidance so that they can know ahead of time--and again at the time--that the small appetite of the one year old is not "poor" and all is well.

We know too that child care does best when custom fitted to an individual child according to his individual differences, yet there are certain standards of reference, such as height and weight tables, tables of developmental expectancies, and other "norms" that give an idea of how a child compares with his peers--other children situated reasonably like himself, at least in age, and sex.

The first step, then, in appraising a child is usually to compare him with his peers, to see how he compares with others. The next step is far more rewarding--that is, to watch a given child over a period of time and see how he compares with himself as observed at repeated observations. Such serial observation is more valuable. An example might be, a 12-year-old girl who appears wearing a size-18 dress. Anyone interested in girls and dress sizes would have a useful piece of information in regard to this girl's size in relation to the size of other 12-year-old girls. This would be informative, but not nearly so useful or informative as it would be if we knew, say, that 6 months previously she had required a size 20--or a size 9.

We must also consider inherited characteristics of an individual. I am not referring to complicated concepts of genetics, but to readily observable family characteristics--"familial determinants." Sometimes workers in child health concentrate so earnestly on their care of a child that they fail to look around and see what the rest of the family is like. A small, well-built child from a small, well-built family may be misinterpreted--and mistreated--as malnourished. No amount of feeding will change a dachshund into a big sheep dog or Russian wolfhound--though presumably too energetic feeding efforts might make an obese dachshund or, more likely, a sick--or discouraged--little dog.

It helps us then, to remember how children compare with other children, how they compare with themselves at an earlier date--or, even better, how they compare with a previous series of observations on themselves. And it helps us to consider what sorts of bodily inheritance we observe in other members of the family.

Orderliness of Growth and Development

Similarly, it helps us to remember that growth and development are orderly processes. First things come first. Children acquire motor mastery of the upper part of the body--the mouth, the lips, head, neck, and eyes, long before they acquire control of hands, and hands in turn are skillful before fingers, and there is motor-mastery of hands and fingers long before there is comparable control of feet. Many an adolescent boy could assemble a model plane with tweezers and glue and yet have so much lower extremity clumsiness that he falls over his own feet.

Each stage of growth and development depends on the success of the preceding tasks of growth and development. Therefore, a primary goal in professional education of those who will serve children is an awareness of outstanding characteristics of various ages of childhood, so that services may be brought into sharp focus at crucial times. For example, all children need nutrition, but all children also have certain differences at certain specific age periods. Consideration of age-specific

growth and development characteristics enables us to get away from loose generalizations and to think about the special need of specific age periods.

Let us consider this point of view in relation to "infancy," the "preschool period," and to "children of school age." The first thing we discover is that even those subdivisions are artificial. Childhood--in fact, life--is one continuum. Childhood is not broken up into clear-cut time-segments. Three children entering kindergarten next fall will all be "school age," or they could not legally enter the school system, but we must not be deceived professionally. One of the three may have the physiological characteristics and nutritional needs of a preschool child, or younger. One may be more like an elementary school child, and one may just possibly be like our idea of "child at beginning school-age."

"School Age"

Terms like "school age" are legal and administrative terms. For feeding purposes we must think more pediatrically and know that many little children in school still present the physical characteristics, and the needs, of earlier childhood. This is not discreditable. There are wide ranges of "normal" difference in the timing of growth and development, and there are no special merits in earliness. Daffodils that bloom in the spring are not superior to fall-blooming chrysanthemums.

In this meeting we are primarily concerned with school-age children, so I shall give no more than a nod to their predecessors, the infants and preschool children. Notice that I do not say "those other groups, the infants and preschool children," but rather, "their predecessors"--that is, themselves at earlier stages, for the children we serve in school are best viewed when we see them standing on the pedestal of their earlier years.

The main features we want to remember about the earlier years are that food has more meaning in child growth and development than simply as nutrients to permit growth and maintenance. Food serves an equally significant role in at least three areas of development. Physically, in motor mastery of the body--eye, hand and mouth coordination, the complexities of swallowing, and the safe use of mouth and throat muscles, in preparatory practice for future feeding and speech. Mentally, feeding is a potent learning process. The mouth is a sensory organ. The child "puts everything in his mouth," not with the intention of eating everything he finds, but of learning about everything within mouth-reach, and of accomplishing that learning through the sound, taste, and feel perceived by the mouth. Emotionally, feeding is a primary interpersonal relationship with other people all through life.

Infant growth is so rapid and spectacular that many parents are ill-prepared for the slower size changes of the second year, and right there we have the onset of some of the problems of school-age nutrition, around the first birthday, and an unlightened parent may misguidedly press food on the child in an attempt to continue the large appetite and rapid rate of gain of the first year. The results are stress and strain on parent and child, and the production of genuine food distaste and feeding problems, many times of lasting nature.

Many a school-age feeding problem can be directly traced to these situations where parents mistakenly perceive normal 1- to 2-year-old children as "feeding problems." The appetite of the year-old child is small, but not "poor" in the sense of poor appetite seen during illness. This is a key area for improvement in nutrition education. Everyone working with the parents of year-old children needs to know in mind and heart the difference between a "small" appetite and a "poor" appetite.

The Preschool Period

Growth in preschool years continues to be less rapid than in infancy, but still places heavy demands on a young body. Developmental strains take further toll for along with eager interest in the surrounding world and an expensive energy outlay in almost incessant motor activity during waking hours, there is diminished interest in food.

Parents are right that such "busy" little children need careful feeding, but the nutritional "care" needs to stress quality rather than quantity. Parents are often so dismayed at the small quantity of food the preschool child takes that they offer all manner of nutritionally poor food, even "junk," "just to get the child to take something."

Nutrition guidance here is good preparation for the school years. The preschool period is the time for professional people

to comprehend normal parental anxiety and to harness it toward use of high-quality wholesome food habits rather than to let the anxiety be dissipated into a frantic feeding of trash.

Influences on Family-Feeding

Infancy and the preschool years are the "open-sesame" periods for family nutrition. Nutrition education profitably considers how influential wise child care can be in reshaping and permanently reorienting family life patterns.

Goals in well-child care go beyond a child's immediate well-being and work toward establishment of healthy habits for a lifetime. Simultaneously, rational child care tends to reach, and exert pleasant improvement on, the lives of others in the home. This is one of the ways in which a little child "leads" them.

The preschool period and the early school years are far from separate nutritionally or physiologically, and both are still times of frequent illness. Many a child entering school has all the physiologic characteristics of any preschool child--relatively slow growth, great energy expenditure, a need for more rest than most school settings can readily provide, and often a need for more than three meals a day. And the preschool and early school year children have much illness. This is not a reflection on their general health or the care they receive. It is principally due to their encounters with the world's acute communicable diseases to which they have not yet become immune. These disease encounters, though to be expected, are not without their nutritional cost.

The sick child "spends" his resources in the fever, the illness itself, or, more accurately, in the expensive body-responses to disease. To complicate matters, one aspect of illness itself is usually curtailed food intake, and often impaired food utilization. Moreover, some of the impairment of both appetite and utilization may linger for a while after the illness.

School carries with it long absences from home and from nutritional founts that were present through the preschool period. The preschool child often supplemented his diet, as need arose throughout the day, by nearness to the kitchen and food preparation. One should not hastily lump these activities together and disparage them as poor feeding practice called "eating between meals." Some of the best childhood nutrition has probably been done in the form of the intake of small, frequent, wholesome feeding while mother is preparing food. Good groceries still provide good nutrition, whether eaten from a spoon at the table, or with the fingers, in happy companionship, at Mama's knee.

What reason have we to think that three meals a day are enough for all children at all ages? If the preschool child does well with fairly frequent, high-quality feedings, what of the school child?

It seems that there is room here for thought, study, and research. Hungry children, just like some hungry adults, can get so hungry that they lose their appetites. Which children do best on three meals a day? Which do best with four meals, counting a planned bed-time feeding as the fourth meal? It seems to me that these are subjects we need to investigate further. I am not suggesting any probability that between-meal nibbling is necessarily desirable. I am wondering whether good nutrients distributed fairly evenly over the waking hours may not be what many children seem to reach toward.

Whatever we finally agree on as desirable feeding for groups of school children, or for individuals, needs to be examined against the realities of their daily activities. For example, if we agree that children seem to do best with a nutritious breakfast, we need to go into some details about when and where breakfast fits into the pressures of child life. Under what circumstances can a child go through the rigors of getting off to school in the morning and still have time--and appetite--for breakfast before his departure? Are there children who would be better able to eat later in the morning, and if so, what practical administrative arrangements--from brown paper bag to Oslo breakfast--might be employed? There is much room for research in readiness and child feeding, and such research can prove helpful to nutrition education.

Growth and development principles do not always guide us with answers, but they often provide us with questions through which we can later find answers.

School-Age Strains

The school child in his early and elementary school years has energy outlays in diverse directions. Growth is at a moderate rate, but his activities are often

intense--especially through his efforts to acquire further mastery of body mechanics, and to "keep up" with his friends. This keeping up with the young Joneses is one of the greatest challenges of the young school age child. He works at it from morning until night during elementary school years, and gets along quite well provided--provided that he gets the protections of food and rest and is spared the attrition of needless or excessively severe illness. Illness can complicate his nutritional needs and his capacity to meet them, and similarly, so can fatigue.

General supporting health services, including all appropriate immunizations are of help, and so is a deliberate attention to rest--not vague generalities about "enough rest," which we cannot tolerate anymore than we can tolerate vague generalities about a "good wholesome diet," but specific exploration into hours of sleep and circumstances of sleeping arrangements--and particular attention to what goes on in relation to activities with his age-peers. The lucky child is the one who can play, exercise, and rest, in response to the dictates of his own feelings.

The uninitiated may think of children as being in perpetual motion. The more experienced observer knows that, if given a chance, children work and rest, in an alternation of exercise and repose. They rush around, and then they loll and loaf. Both the activity and the inactivity are necessary to their well-being.

This points up a fallacy frequently voiced in physical-fitness campaigns. Despite prevalent enthusiasms on the part of those perhaps better acquainted with other age periods, young school age children do not do well in pressure sports. A child does not thrive in group activity where the desire to keep up with the group, or to meet a leader's expectations, moves him to press on, ignoring his own felt need to rest a little and revive.

The Paradox of the Strenuous "Latent Period"

In discussions of emotional development one hears much of the "latent period," the early and intermediate school years, as something of a pause and time of relative tranquility in the child's emotional growth and development. This "latent period" concept must not confuse us in regard to physical growth and nutritional needs.

The child in this age group may be having a quiet time emotionally, but from the nutritional standpoint he is busy. He is either still coping with the infectious disease encounters mentioned above or is recuperating from them. He is moving along steadily, though rather inconspicuously in his growth. He is keeping up with his own motor mastery and skill development, not only as an independent worker as he did in the preschool period, but now more and more in conjunction--or even competition--with his peers. And added to all this physiological expense he--or she--is also getting ready for the preadolescent growth spurt and the great changes of puberty. For both boy and girl, these are days when their bodies are getting ready for demands on all resources--especially their nutritional resources.

Before long, the boy is going to undergo changes which convert the tender body of the boy child to the heavy-muscled, powerfully built physique of the adult male. Intricate processes determine the architecture and the building methods--but the building materials are certainly foods.

Even sooner, the girl is going to go through corresponding changes, and she has two additional demands--the demands of the oncoming menstrual periods, which are not without cost to her nutritional reserves, and the need to lay away nutritional treasuries for her own future children.

We all have heard the phrase "eating for two" as applied to the pregnant woman. It is a controversial phrase, to be sure, but we can all accept that the needs of the pregnant woman are at least twofold--her own needs and those of the child, since we speak not of a quantitative "stuffing," but of wise qualitative food selection.

If this is true, what of the adolescent girl? For whom is she eating? For herself and for how many unborn children or even unborn generations? (It has been said that even a child can count the seeds in an apple, but only God can count the apples in a seed.) Whoever provides good nutrition for an adolescent girl may unwittingly influence multitudes, not only through the care and replenishment of the girl's own physical resources but through awakening her to awareness of good nutrition, so that at a later time she may guide and protect those who come into her life.

These are the growth and development challenges to nutrition education. Whatever our profession, if it involves nutrition and

involves children, we need educational preparation which will enable us to consider the age-specific characteristics of the population group we want to serve. Through such education those who guide child feeding can fortify children and youth at times of special vulnerability and can make the most of the transient opportunities of childhood.

AN EVALUATION OF CHILDREN'S DIETS

Ruth M. Leverton, Ph.D.
Assistant Administrator, Agricultural Research Service
U. S. Department of Agriculture
Washington, D. C.

The program committee for this conference has planned that an evaluation of children's diets would form part of the framework within which you will be assessing the present progress in nutrition education and formulating plans for the future.

Dr. Stitt has discussed stages in development with their implications for the feeding and nourishment of children. Now it is appropriate to assess the present status of the food and nutrient consumption of children and its implications for the nutritional health of the children of today and the adults of tomorrow.

Numerous dietary studies have been made and the results invariably show that many children are eating the kinds and amounts of food which supply an adequate and often an optimum intake of nutrients. The assortment of food or the times and places when it is eaten may differ from some of the time-honored, rigid patterns we once knew, because today we have greater understanding of the importance of the psychological and social aspects of food habits.

Just as diets of households in this country have improved over the decades, so have the diets of children, and often children's diets have improved more than those of adults.

When inadequate intakes occur among the children, calcium and vitamin C followed by vitamin A in that order, are the nutrients in shortest supply (that is, of those we know the most about). As one would expect, these are similar to the inadequacies most frequently found in the diets of adults. When translated into foods the shortages emphasize the need for increased consumption of milk and cheese and fruits and vegetables, especially those which are good sources of vitamin C and vitamin A. Increasing the use of these foods by both children and adults who are not now consuming enough, offers a continued challenge to our nutrition education programs.

Dietary studies also show that below the teen years the children's food intakes are more likely to meet the NRC recommended allowances than during the teen years, and that at every age boys are likely to eat better than girls in relation to meeting their nutritive needs. Causing greatest concern are the nutritional inadequacies in the diets of some teen-age girls. Often these girls actually decrease their intake of essential nutrients as they approach the teen years when nutrient requirements are markedly increased for growth and maturation.

Much of the proof of whether diets are good or poor lies in the nutritional status and physical fitness of the children. A nationwide survey completed in the last decade reports that the nutritional status of the USA on the whole was good, probably the best that has ever been found. The word "probably" had to be inserted because there were no identical earlier studies with which to compare these results. Thanks to better nutrition, better medical care, and better environment in general, the average height of children in the USA is greater at every age than it was 50 years ago. Adults too are as much as 2 inches taller. The nutritional advantage of bigness per se has not been established, nor is it likely to be. Certainly, however, there is advantage to having a healthy body, and that which contributes to the attainment of a healthy body increases the possibility of achieving the body build and size designed by heredity.

There is concern today over the poor showing that many of our children make in tests of physical fitness. They are branded as soft, passive, and lacking in

stamina. They are classed with us adults as a nation of spectators and riders, who are allergic to voluntary muscular effort of most kinds. We do not expect the nutritive value of a single meal to be an accurate indicator of a lifetime of food intake. Nor does it seem reasonable to expect a single test of strength, speed, and coordination, which is made on the spot without regard to recent activity or training, to indicate the potential physical fitness of our youth--the kind of physical fitness that is developed by thorough, systematic training of a healthy body.

Considering quality of diet, nutritional status, size, freedom from debilitating diseases, and the many other favorable aspects of physical environment, I suggest that the potential physical fitness of our children and youth has never been as great as it is today. For those who seek physical fitness, attainments have never been as high. New records of speed, strengh, and coordination are no sooner made than they are replaced by still better records. On every hand there is evidence that when children and youth want to be participants in an active life instead of mere spectators they can succeed and often excel. Never have there been so many careers demanding physical and mental stamina, technical mastery, and creative ability. Young people are choosing these careers and succeeding in them. Does it not follow then that when our children and youth see physical fitness related to what they want to do and what they want to be, they will be eager for the information and training that will help them develop good habits of activity and food selection? Do not we also have a responsibility for providing them with a variety of experiences in physical activities so that they can make wise choices of active pursuits?

To the criteria of the kinds and the amounts of nutrients for evaluating children's diets, I wish to add a third one--that of patterns of food selection. Patterns of behavior can be more potent than knowledge in directing actions because knowledge of itself does not have the power to make its possessors use it. In every aspect of behavior, whether we are learning or teaching, we seek patterns to use as guidelines to effective living.

In nutrition education we deal chiefly with patterns of food selection--evaluating them, helping to establish good patterns and to improve poor ones. For standards we seek patterns that offer freedom for cultural and personal preferences, patterns that accommodate to various circumstances of income and environment, of course, and patterns that are consistent with scientific principles. "Food for Fitness" and its predecessor "The Basic Seven" are well-known patterns which were developed for such guides and have stood the test of time.

As children grow into the teen years they may express their need for independence by altering their eating patterns--often substituting poor selections of food for good ones. A good food guide and a knowledge of food values will make it possible for us to be quite permissive in directing their food selections to meet the nutritional needs of this period of physiological and emotional change. When children arrive at adolescence with a good eating pattern already established and then receive understanding guidance, the changes they choose to make in their food selections need not cause nutritional inadequacies.

Some of our children and youth are developing patterns of eating that lead to overweight. Such patterns need attention from parents and all those who influence the child, as well as the child himself, because excess weight is undesirable at every age. Also the overweight child is more likely to become an overweight adult than is the child of desirable weight.

Several kinds of imbalances are responsible for overweight. The basic imbalance, of course, is between the amount of energy supplied by the food intake and the amount needed for normal growth and activity. Then there is an imbalance in the nutritive contribution of many popular foods--their energy yield is high in relation to their other nutritive values. Some eating patterns include an undue proportion of these foods so that a child's energy requirement is met or exceeded before his other nutritional needs are met. Studies with laboratory animals show that diets with a high sugar content stimulate the animals to eat more and to deposit more fat than diets in which starch is the chief carbohydrate.

Also leading to overweight is the imbalance between the ways and times that food is used in everyday life and our need for food. When foods are used so frequently for chiefly social or psychological satisfactions, the amounts are usually excessive

in relation to our ability to use the extra energy supplied.

For many children there is an imbalance between the number of opportunities they have for making choices and the amount of training and practice they have in making good choices. The tremendous variety and availability of foods of high flavor appeal, the unprecedented high level of purchasing power among children, and the widespread freedom children have in making food choices mean that they have more opportunities than ever before for making poor food choices.

There is a fortunate trend toward allowing children to make choices within the Type-A pattern for school lunch. This provides them with realistic experience in making desirable choices and at the same time assures them of a nutritious meal. When children are offered a la carte service with no such pattern as a guide, their poor choices often exceed their good ones.

From time to time food guides need to be reviewed in the light of scientific advances and their implications for wise food selection. Presently there is widespread interest and concern about the place of fat in the diet. Much of the concern centers around the kind of fat. There are saturated fats, supplied chiefly by animal fats, and then there is the polyunsaturated fatty acid, linoleic acid, which is most abundant in corn, cottonseed, and soybean oils. Linoleic acid is now recognized as an important nutrient but exact quantitative requirements for children and adults have not been established. There is some evidence that in adult diets too little linoleic acid in relation to the amount of saturated fats may be one, but only one, of the many factors involved in the occurrence of elevated cholesterol levels in the blood, an indication of disturbance in fat metabolism.

At the present time, we have no evidence that problems in fat metabolism leading to elevated cholesterol levels occur during the years of normal growth and development. Nor does common sense suggest that practices designed for correcting defects that have occurred in a mature, aging, and comparatively inactive body should be used in feeding a developing, growing, active child. However, some of our children are physically inactive and an increasing proportion of them are becoming overweight--two factors recognized to be involved in the development of heart and circulatory abnormalities among adults.

Considering these trends, we are both justified and obligated to continue to stress balance and moderation in food intake and thus avoidance of overweight, and to increase our emphasis on the need for purposeful physical activity.

Evidence from several research studies indicates a probable relationship between the kind of carbohydrate in the diet and normal fat metabolism. The complex molecules of starch require more time for digestion than the simpler molecules of sugar. Slower digestion means slower absorption and prevents overloading the liver. This suggests the importance of whole wheat and enriched breads and cereals and vegetables such as potatoes as sources of calories from carbohydrate. These foods should also be the chief sources of the additional calories needed when food energy requirements are especially high as for the teenage group.

Since we have learned that linoleic acid is an important nutrient, some attention should be given to the use of corn, cottonseed, or soybean oil in salad dressings or in cooking. As little as a teaspoon or two of oil per day contributes significantly to the intake of this nutrient.

The milk intake need not be limited as long as the children are eating a well-balanced diet and not overeating. Milk, including dry milk solids without fat, furnishes important protein, minerals, and vitamins. Considering that calcium is usually the nutrient most likely to be in shortest supply, we must do everything possible to see that every child has an adequate supply of milk.

About 65 percent of the schools in the United States are now participating in the School Lunch and Special Milk Program but in some of the schools only 10 to 30 percent of the children are availing themselves of the service. The challenge to nutrition educators, school administrators, community organizations, and to the milk industry is to emphasize the value of these programs, to make them more attractive and better appreciated, more completely and widely used, and thus to extend their advantages to more children.

We can feel a sense of accomplishment in the fact that the diets and nutritional status of our children are as good as they are today. To maintain the progress which has been made, however, requires watchfulness, encouragement, and reinforcement

by parents, teachers, nutrition educators, and everyone who is concerned with nutrition and health. Nothing can weaken good patterns faster than neglect or disuse. The obligation of nutrition education goes far beyond correcting undesirable eating patterns. Perpetuating and strengthening good eating patterns wherever they exist is the greatest commitment of nutrition education.

OBESITY AND PHYSICAL FITNESS

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Normal Body Fat in Adolescents

It would be appropriate to discuss what is known about normal body fat during this period of growth before discussing excess storage of fat.

There are two ways of approaching this problem. The conventional way of determining normality of growth is to compare an individual's body weight with an average. This only tells us the sum total of body tissues and not their individual contributions to the total. Behnke has clearly shown the danger of using height-weight standards in adults. Professional football players may deviate far from established height-weight standards yet actual measures of body fat are normal. Such situations can and do easily occur in adolescence and it is proper in view of our present knowledge to measure body fat. This can now simply be done with skin fold calipers where skin fold thickness is readily measured.

What are the normal trends in fatness during late childhood and adolescence? Both boys and girls slowly add body fat up to 12-13 years of age. Thereafter girls continue to increase in subcutaneous fat while boys lose body fat.

What can be done about obesity?

It is almost unrealistic to believe that adolescents can lose substantial amounts of body fat and be reduced to normal body composition by the conventional methods of dietary reduction used in the doctor's office or in the outpatient department. Long-term studies would suggest that this is impossible. It has been shown, however, at a summer camp for obese adolescent girls where food and activity can be controlled that significant weight losses and change in attitudes can be achieved. Long-term followups can only tell us how permanent such losses are.

Furthermore, little thought or consideration has been given to the burden imposed on the boy's or girl's nutritional status by caloric deprivation at a time when requirements for protein, calcium, calories, etc., are at their peak. Obese adults can be evenly maintained at a nitrogen equilibrium at approximately 700 calories a day with a high-protein intake. Few data are available on nitrogen equilibrium in adolescence on reduced caloric intake. Such a study is presently in progress in our own laboratory, and suggests that caloric and protein intakes may be considerably higher than the present thinking would suggest. For example, one boy in our study who was about three-fourths of the way through his adolescent growth spurt went into negative nitrogen balance on a diet which consisted of 1,500 calories, with 20 percent of the calories as protein.

It is obvious that if we are going to put children and adolescents on weight reduction regimes, more information about the effect of caloric reduction on their growth must be available. What then are the realistic goals for the treatment of obesity in adolescence?

First, that the physician or nutritionist not make the problem worse. In the first place, we ought to make sure that we are not putting the patient--the child or adolescent--in a position in which we are asking the impossible of him physiologically or psychologically; that is, that he systematically lose weight down to normal body composition and remain at that level. Most of us realize how difficult this is to achieve, and by assuming that the next patient will be able to do this we are only increasing the youngster's feelings of failure and inability to control his appetite. This only increases his sense of inferiority,

his feeling of being different and basically unable to please those adults who are important to him.

Second, to make sure that the parents, and particularly the mother, understand that this is not a moral issue, that the ability to eat or not to eat is not a measure of strength, character, and good propriety, but that eating is only one aspect of fat storage and fat release, about which we know so little.

This does not mean that nothing should be done but that the whole problem should have realistic aims. These aims should be properly holding the line in terms of gain in body fat. We have to remember that gains in weight are normal in children and that what we are trying to prevent is more gains in body fat. The mother's harassment, nagging about food, and use of bribes, etc., may only confuse and create more guilt about food. This tremendous guilt that obese adolescents have about food is often forgotten. This observation is one of the most striking noted at the camp for obese adolescent girls. What is ordinarily a pleasant activity for most of us--that is, food and eating--is an area of strength, guilt, and remorse for obese adolescents.

Finally, we must learn to accept these youngsters for what they are and not for what we would like them to be. If we treat them as people and accept them for what they are, this will help them to minimize their feelings of being different and disliked and unwanted. We must always keep in mind in our treatment that it is much better to have a reasonably well adjusted obese adolescent than to have a strenuously treated, confused and unhappy obese adolescent.

Natural History of Obesity

There is very little information on the natural history of obesity. Given boys or girls who are obese, what are their chances of being obese as adults? Recently evidence in one study suggests that at least one-third who are obese as children will be so as adults.

In a recent longitudinal study, it was demonstrated that of the overweight boys 86 percent were overweight as adults. Of average-weight boys, only 40 percent were overweight as adults.

In the female, 80 percent of adolescents who were overweight became overweight as adults. In contrast, only 18 percent of the average-weight girls became overweight adults.

These studies emphasize the fact that most obese adults will not "grow out of it" but that obesity in adolescence is apt to persist into adult life. This then, I believe, makes it more important for those caring for children to intensify their efforts in the areas of research and then, when mechanisms are understood, in therapeutics.

Etiology

By the 1940's, through the work of many nutritionists, it could be said that there was no defect in energy balance and that the obese individual ingested more calories than he or she burned. Starting the 1940's, it was made clear that most obesity was unrelated to any glandular disorder. Furthermore, Bruch called attention to the close association between emotional factors and obesity.

Unfortunately the interpretation of these trends became "obese people overeat--they are overweight because they are neurotic or weak willed." In the 1950's physiologists and biochemists became increasingly interested in the metabolism of obesity. Some of the interesting developments in human obesity are worth quickly mentioning:

1. Glucose tolerance. Tolerance curves of a significant number of obese are "diabetic like" in their response. This had been known but interest was revived in this area--for instance, this abnormality associated with obesity can be abolished by first priming the obese subject with cortisone.

2. Work relating to the appetite mechanisms and evidence for the glucostatic theory of Mayer in appetite control. Stunkard has published interesting observations on humans concerning arteriovenous differences and their relationship to the presence or absence of hunger contractions.

3. Evidence that adipose tissue, contrary to prior opinion that it was relatively inert, is now known to be very active metabolically.

4. Recent evidence to show that the major source of energy in the body during fasting probably is not glucose, but free-fatty acids--FFA. Recent work suggests that FFA plays a major role in the energy metabolism of a healthy individual and in

the basal state could account for almost all the calories consumed. Therefore it would make sense to investigate the role of glucose and FFA simultaneously in obesity. Such studies are currently being conducted in our own laboratory and are most promising in being able to demonstrate associative defects in both glucose and free-fatty acid metabolism associated with obesity in adolescents.

5. Adrenal-steroid metabolism is interesting in that excretions of 17 keto- and 17 hydroxy-corticosteroids in urine are high--and that response of the adrenals to stimulation with ATCH is hyperactive.

6. Obesity in general is associated with resistance to ketosis on a low-caloric, high-fat diet. This is tied up in part with FFA metabolism.

7. Evidence from physical measurements--

a. May be larger from birth
b. Growth during childhood is accelerated
c. Earlier adolescent growth spurt

DENTAL HEALTH PROBLEMS RELATED TO CHILD NUTRITION

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It is a pleasure for me to attempt to point up problems of dental diseases which are prevalent among school-age children and to discuss nutritional factors which may be implicated in positive dental health. As you all know, much has been written about the role of nutrition in dental health, and it is unfortunate that much of what has been said and widely publicized is contrary to fact.

The main areas of concern, when talking about dental health problems of children, are those of dental caries, periodontal disease, malocclusion, and accidents to teeth.

There are no scientific data to indicate that simple gingivitis or deep-seated involvement of the tissues that hold the teeth in place can be successfully treated by the addition of specific nutrients to the diet. This lack of evidence is also true of malocclusion in which the teeth are improperly alined in the dental arch. These conditions cannot be corrected through alterations in the diet. Of course, this does not mean that nutrition is not important in the maintenance of good general health or that the soft tissues in the oral cavity do not require the elements necessary to assure proper metabolism. It does mean, however, that diseases of the tissues surrounding the teeth cannot be cured simply by correcting dietary deficiencies.

Since accidents to teeth are not related to problems of child nutrition I shall not discuss that subject but shall devote the remainder of my discussion to the subject of dental caries. Simply stated, the process of dental caries means acid plus tooth enamel; and acid in sufficient strength to dissolve the enamel means acid-producing bacteria and sugar. Therefore, from the dietary standpoint, the consumption of fermentable carbohydrates plays an important role in the caries process.

There are of course other variables which are most important in the picture of dental caries, such as the ability of teeth to be self-cleansing, the amount and buffering power of the saliva, the anatomic characteristics of the teeth, and their position and arrangements in the dental arch. Heredity characteristics play more of a part in the form and positions of teeth in man than the nutrition received by the tooth during development.

The mechanism of dental caries is based on five factors: a caries-susceptible individual; acid-producing or acid-tolerating bacteria, or both; orally fermentable carbohydrates; an appropriate bacterial enzyme system, and a bacterial plaque. However, a complication in the control of these factors is the limited knowledge of the precise causes of oral disease. Since scientists can now feed germ-free

rats a diet that produces ruinous tooth decay in most normal rats, it has been found that the germ-free rat shows no decay. We now know that tooth decay does not occur unless bacteria are present.

In 1957 I requested Dr. Philip Jay,[1] professor of dentistry at the University of Michigan School of Dentistry, to prepare a paper on nutrition and oral health for consideration as one of the areas in a world wide informational program on nutrition sponsored by the World Health Organization that year. I should like to present some of the items which Dr. Jay considered as fact:

1. "It has been shown that the presence of the proper amount of fluoride in the tooth enamel does reduce its susceptibility to dental caries. It is clear that the fluoride, in order to be effective, must be present in the diet during childhood when the teeth are being formed. This is best accomplished by adding the fluoride to public water supplies thus enabling all of the children to receive the proper amount as their teeth develop. The fluoride ion is the only substance discovered, thus far, that can be considered to be an anticaries nutrient.
2. "The teeth themselves, once they are fully developed and erupted in the dental arch, are not influenced by dietary deficiencies. Repeated studies have shown that cavities do not occur because the tooth is deficient in calcium or phosphorus.
3. "Another faulty notion concerns the effect of pregnancy on dental caries activity. It has been widely believed that during pregnancy, if the diet contained insufficient mineral for the developing fetus, calcium would be withdrawn from the bones and teeth of the mother. There have been several carefully controlled studies in this field and they have demonstrated that patients who have had several pregnancies do not have a greater number of decayed teeth than do women of the same age who have not had children. Calcium is constantly withdrawn and replaced in the bones, but there is no mechanism by which calcium can be withdrawn from the tooth once it is formed.
   "The position of the American Dental Association in this regard is very clear in the book, Accepted Dental Remedies, which is published each year by the Association's Council on Dental Therapeutics. It is quite understandable that teeth and bones should react differently to nutritional disturbances since these tissues are not similar. Bone injuries are subject to healing but damage to the dental enamel is physiologically irreparable.
4. "Despite the obvious fact that dental decay does not result from disturbances in nutrition, it is well known that the disease can be prevented by the adherence to low sugar diets. This has always been the subject of considerable controversy. Many nutritionists claim that the inclusion of large amounts of sugar in the diet results in the crowding out of foods which contain important teeth protecting minerals and vitamins. The vast preponderance of evidence, however, indicates that the presence of sugar on the teeth serves as a substrate for acid attack. Acid taken into the mouth in food and drink is immediately neutralized by the saliva and is, therefore, harmless. Acid which is produced by carbohydrate within the dense bacterial plaque on the tooth surface is quite a different matter. The saliva is unable to penetrate the plaque in sufficient concentration to prevent the production of acid by the enzymes of the bacteria which are present on the surfaces of caries susceptible teeth."

I think that the statements made by Dr. Jay are most important, especially as one reviews some of the statements which are found in paid advertisements and which are promoted by certain groups interested in the sale of products that contain large amounts of fermentable sugars.

In 1948 I presented a paper entitled, "Diet, Nutrition and Dental Caries,"[2] before the Dental Health Section of the American Public Health Association. In this paper I read from an advertisement found in a dental magazine entitled "On the Dual Value of Candy." Since it would lead a person to think that children could almost live on candy, I should like to read from the advertisement:

> "Socially candy has long been accepted as a pleasant part of our daily lives. From early childhood on, candy is considered an appropriate accompaniment

[1] Jay, P. Nutrition and Oral Health. Unpublished.

[2] Sebelius, C.L. Diet, Nutrition and Dental Caries. Jour. Dent. Child., 16:11-14, Third quarter, 1949.

of the festive spirit of birthdays, holidays, anniversaries, and other joyous occasions.

"In recent years, with advancing knowledge of nutrition, the value of candy as a worth-while part of the daily diet has become recognized. Most of the kinds of candy manufactured today are made of a number of valuable foods which contribute to the extent they are used to the satisfaction of many nutritional needs.

"The candies, in the manufacture of which milk, butter, eggs, fruits, nuts or peanuts are used, to this extent also (a) provide biologically adequate proteins and fats rich in the unsaturated fatty acids; (b) present appreciable amounts of the important minerals, calcium, phosphorus and iron; (c) contribute the niacin, and the small amounts of thiamine and riboflavin, contained in these ingredients.

"Whether enjoyed as a delectable tidbit during a friendly gathering--or served at the end of a family meal--or eaten as a quick energy food following strenuous activity, candy has a unique and valid place in the human dietary."

Last year the American Dental Association was asked to revise its stand in regard to sweetened beverages. Staff members of the Councils on Dental Research, Dental Therapeutics and Dental Health and the Bureau of Dental Health Education were asked to look into the matter. After careful consideration, these Councils recommended that the Association's present policy in regard to sweetened beverages be continued until there is adequate direct clinical evidence to indicate that the consumption of commercial sugar-containing beverages commonly designated as soft drinks cause no substantial increase in the incidence of tooth decay in the population group within the range of 6 to 18 years of age. In arriving at this conclusion, it was stated first that "the demonstration of lack of hazard to dental health from the consumption of commercially distributed sugar-containing beverages is the fundamental responsibility of the manufacturers and distributors of these products. Because of the known relationship of sugar consumption to dental caries, and because of the lack of any decisive clinical study of the degree to which sugar-containing soft drinks contribute to the dental caries problem, this Association is fully justified in the present policy as expressed in the 1953 resolution."

Recently, a dental society wrote that the parents in the community were insisting that chocolate milk be sold in the lunchroom and that the society wished assistance from the Council. The letter was replied to in the following manner:

"In regard to the sale of chocolate milk in schools, children need to be taught to limit sweets in their diets. Controlling the intake of sugar is an individual problem, and one which education can solve. I think that we are in agreement, that chocolate lends itself more easily as an in-between drink, than does whole milk. The American Dental Association, the American Medical Association and the National Congress of Parents and Teachers have prepared statements relating to the sale of sweets in school, and I would consider chocolate milk in the same category as I would other sweetened products.

"I think that we are all in agreement that chocolate milk is not superior to whole milk, mainly because sugar is added to it. I feel certain that in some areas drinks sold as chocolate milk are not made from a high grade of whole milk but may be made in the form of a chocolate drink which does not contain whole milk but, rather, a milk substitute.

"Another point which I think can well be made is that most of our child population are not undernourished in regard to their intake of calories. Chocolate milk contains more calories than does whole milk.

"It would seem that the problem of the sale of chocolate milk in schools is one which should be decided by local action, and I am sure that most school authorities realize that it is important to teach proper nutrient habits and to limit the intake of sweets. In a recent article highlighting research in public health dentistry, Dr. Frank Law stated that the local action of refined carbohydrates and the frequency of between-meal snacks are related directly to dental caries rates. I think that this is well worth consideration."

In closing, the following guidelines--if adhered to--will help to insure better health for children:

1. The first step to insure better dental health for children would be to institute water fluoridation to assure all children living in the urban area optimum fluorides. The fluoride ion should be considered an anticaries nutrient.
2. Community topical fluoride programs should be organized, especially in rural areas and where the water supply is not fluoridated. Also, all parents should be urged to provide their children with an approved fluoride dentifrice.
3. Good dental habits should be practiced at school as well as at home, and school children should be taught correct methods of toothbrushing and oral hygiene.
4. Attempts should be made to motivate parents and children to reduce the consumption of fermentable carbohydrates. This is especially true for in-between meal eating.
5. Every effort should be made to encourage children to visit their dentist.
6. The following slogan might well be adopted: Eat a protective diet to promote normal growth and development; keep the sugars low to help control dental caries.

SOCIAL AND EMOTIONAL ASPECTS OF CHILD NUTRITION

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If we are to understand the social and emotional aspects of nutritional problems, probably the best point from which to start is the point at which the organism, following its birth, begins to depend on its intake of food for its life. It is very hard to think of a newborn as anything but a sweet bundle of innocence, but it is actually a member of the human race. As part of its inheritance, it has a set of drives called instincts or urges. Depending on how these are handled its picture of itself in relation to other people emerges, as well as its body image. This newborn is not really part of anybody and operates as an independent individual. It has its needs, its drives, its urges, but when these are met, the baby turns away. It sleeps 20-22 hours out of the 24. It is not able to see itself as part of another person.

The next step in its relationship picture is probably the most important one in its personality development. The baby comes to see itself as part of someone else on whom it is completely dependent. This normally takes place somewhere between 3 to 5 months of age. The way this is accomplished is chiefly through the feeding process, chiefly through its mouth function. In order to understand how this is accomplished, we have to look at each baby as an individual. When we look at its instincts, drives or urges, we find that there are quantitative and qualitative differences in them. Let me give you two examples of how the individual differences can influence the way in which the nutritional aspects go hand-in-hand with personality development.

Physiologists who have been working with pepsinogen in the stomach tell us about babies who are born with a tendency to secrete pepsinogen in large amounts. Such babies experience the hunger drive as a feeling that can never really be satisfied. No matter how much food is given to it, a baby such as this would look at the people around as being unable to supply its needs. Therefore, a baby can grow up from the beginning feeling that nobody can meet its needs. From this can grow the feeling that you can't really trust people and give yourself completely to them, or see yourself as part of another person. It is very hard to understand a baby like this. A mother, after months of trying to meet the baby's needs and being unable to, may eventually give up.

Suppose we get a baby with a mild form of brain damage. We are having more and

more of these babies. Sometimes what results from the minor form of brain damage is a type of hypersensitivity. Such a baby may experience being touched as painful. When the mother tries to cuddle it during feedings as we tell her she should to help it become close to her and comfortable with dependency, this baby experiences it as painful and turns away. It might never, therefore, be comfortable in any but an unrelated, autistic or schizophrenic kind of relationship. In other words, food and feeding, as this audience well knows, is the prime vehicle in early personality development, but the individual differences in babies' responses to feeding must be kept in mind if we are to avoid creating and perpetuating personality distortions which can have long-range effects. We have to keep our eyes open to these distortions right from the beginning of life so that we can figure out ways to overcome or circumvent them.

It is not only in terms of individual differences but also the way in which feeding is presented that influences social and emotional responses. There is an island in the South Pacific where the natives are surrounded by other islands inhabited by enemies. The ideal personality in that kind of setting is not to trust anybody because you always must be on the look-out. The way in which the mothers bring up their babies is calculated to establish suspiciousness as a way of life. Sometime in the second half of the first year, a mother on this island breast-feeds her infant. She interrupts the feeding with her baby only half-satisfied. She puts her own baby on her lap, she picks up a strange baby and puts the stranger to her breast with her still-hungry baby looking on. If you do this enough times, you find out even as a baby that you can't even trust your own mother.

I have touched on a few basic facts from our newer knowledge about what we need to consider in terms of the emotional components of the feeding process. It is my hope that the nutrition experts can keep these early phenomena in mind as you deal with the feeding process early in life, as well as when you deal with the effects of them later in the form of nutritional distortions.

A STUDY OF FACTORS RELATED TO EATING BEHAVIOR OF GIRLS
(Abstract)

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A sample of 140 girls, 12, 13, and 14 years of age, was selected from an Iowa town of about 14,000 population for a study of physiological, psychological, and sociological factors which may be related to eating behavior and selection of an adequate diet. The sample was controlled for chronological age, social status, and menarche. An effort was made to select an approximately equal number of girls who had and had not reached menarche for each age group divided among three categories of social status. This experimental design resulted in 18 groups.

Information was obtained by means of questionnaire, food intake records in both summer and winter, activity records, certain physiological measurements, taste threshold tests, food enjoyment scales, and inventories of values and psychological adjustment. Analyses of variance and intercorrelations were used in the treatment of the data.

Eating behavior indices used in the study include percentage of meals missed, snacks, intake of different items of food, number of servings of food per day, repetition of meals, intake of carotene- and vitamin C-rich fruits and vegetables, intake of milk and equivalents, and the caloric value of the nutrient-poor foods. Dietary adequacy was estimated from the percentage intake of the foods given in the basic group plan.

The diets of this sample of girls were similar to those observed in previous studies of Iowa girls. The intake of milk and of carotene- and vitamin C-rich foods was low, according to current recommendations. This group of girls did not tend to miss a great number of meals nor did they consume a large number of snacks. The diets and eating behavior were significantly

better during the winter than during the summer.

Some of the observed significant relationships that seem especially pertinent for consideration in nutrition education are as follows:

1. Knowledge of nutrition as indicated by a test designed to ascertain ability to apply principles to selection of an adequate diet was favorably related to nutrition practices.

2. When health was considered as an important value in selecting food, diets tended to be adequate, but when status, sociability, independence, and enjoyment rated high in food selection, poor food practices resulted.

3. Overweight and concern about overweight were found concurrently with poor eating behavior and inadequate diets.

4. Early maturation was positively related to poor eating behavior and overweight; late maturation was also positively related to poor eating behavior but not to overweight.

5. Good family relations and personal adjustment seemed to accompany good eating behavior and selection of an adequate diet.

6. Social status was positively related to good eating behavior.

The findings of this study indicate that the eating practices of girls are interrelated with their maturation, knowledge, values, social status, personal adjustment, and family relations. To be effective, nutrition education must consider these complex interrelationships.

HIGHLIGHTS OF THE DAY

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As we have been following today's program, I have been reminded time and again of what Dr. John Montgomery and Margaret Jane Suydan said to parents in their simple little pamphlet "Feeding Little Folks." The gist of their opening sentence is that parents' chief worries in child feeding are the result of knowing so much more about food than they know about children.

It would seem that the planners of this conference are of the opinion that much the same statement could be made about the various persons concerned with nutrition education for children who are represented in this 3-day session. Such a conviction would explain devoting this entire first day to children as they develop from infancy to adolescence.

Once we have pooled our knowledge about children--their growth and development in relation to nutrition, their food practices, and some pressing problems that involve nutrition, we can proceed to consider how they learn and how we can increase the effectiveness of our educational activities. That approach makes sense to me and I suspect that your presence here means that you think the same way.

In reference to Dr. Heald and Dr. Lourie, I am reminded how much advancement has been made in nutrition education since the first conference in 1941. I was one of the veterans at that meeting and there was very little said about what Dr. Lourie and Dr. Heald talked of. Then we were concerned with undernutrition and malnutrition; obesity and overweight were scarcely touched on. Now we have a different situation; selecting obesity as a child nutrition problem for consideration today needs no justification.

Dr. Stitt has made a case for understanding what may be expected of a group of children at the various stages of their growth and development and at the same time for recognizing that an individual child within each group is almost sure to vary in some respects from the composite. She has pointed out the great advantage of being able to follow a child through these developmental stages in order to compare his present status with his past as well as with the average of his peer group.

Dr. Leverton has summarized data from studies of food consumption by children. These data give us an idea of what to expect in similar groups of children in the geographical areas covered. At the same time they suggest the desirability of obtaining additional information as a basis

for an educational program with a given group. And of course, anyone working with an individual child has to know what he eats and if possible why.

This afternoon has been devoted to areas that are recognized as presenting special problems.

For dental education, Dr. Sebelius reminds us of the lack of scientific evidence of statements we have all heard--and may even been guilty of making in the dim past--on the specific effect of nutrients on oral health. He stressed educational efforts directed toward encouraging adequate diets low in readily fermentable carbohydrates in any form.

The prominent place given to adolescents is appropriate because their nutritional needs and problems are both great and also because many of us conferees have close contact with this age group. Dr. Armstrong reminds us of the complexity of the factor bearing on food practices at this period. We can take some comfort however, in her finding that the girls who knew most about their food needs ate the best diets.

Would you agree that this has been a rewarding day for us?

HOW CHILDREN LEARN

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Five years ago I talked to your group on this topic. Actually it has not changed--children in 1962 learn much the same way as they did in 1957. A recent review of research in the learning field indicates that our progress has been made in developing theory, in clarifying models. I would add that we have made much progress in sensitizing the profession and allied groups to the dynamics of learning and the necessity for focusing on learning. It is interesting to note that in 1948 Hilgard (1, p. 326) wrote, "There are no laws of learning that can be taught with confidence. Even the more obvious facts . . . are matters of theoretical dispute." Snygg (2, p. 129) says that in psychology theories of learning are taught and argued but not used. Perhaps Snygg is right since learning theory has had relatively little impact on the typical teacher.

It is interesting and significant to note that the following titles have recently appeared:

Learning More About Learning
Freeing Capacity To Learn
Human Variability and Learning
How To Help Your Child Learn
What Research Says About Learning

Such titles are helping to focus our attention on learning and the role of the teacher in the learning process.

There is also an interesting diversity and quality in the current writings:

Developing the Drive To Learn and the Questioning Mind
Better Ways of Teaching Children To Think
Underachievers
Academically Talented
Anxiety and Learning
Shaping Motives for Learning
The Group Contributes to the Individual
Creativity and Learning
Communications and Learning

Note the evidence of an interdisciplinary attack on learning. This is all to the good and suggests a positive and optimistic tone to the emerging interest in the field. Likewise it is interesting to note that the Association for Supervision and Curriculum Development has devoted three Research Institutes to various phases of learning, as well as the 1959 Yearbook, "Learning and the Teacher."

Focus On Learning

We know some things about learning which seem reasonable when reduced to a series of major ideas or guidelines which seem to be central in promoting it

in our schools. At the risk of being rash or of oversimplifying a highly complex and carefully studied phenomenon these items seem to be basic. They are consistent with the best that we know. As leaders we might well find ourselves urging greater allegiance to them in the future in schools and in other situations in which we are attempting to change the behavior of people.

Most Children Are Anxious To Learn

Children seem to have great curiosity, an eagerness for learning, many interests, and great persistence. What important forces we have on our side! The world is so full of so many things. How simple it actually is to use these things and to guide children in their quest for activity, for exploiting cues, for satisfying drives, for pursuing interests, for directing their energies. This is teaching; this is leadership. Central in the task are hidden motivational factors, the clarification of purposes, and the uses of problem-solving procedures.

Fortunately children bring "all of them" to school. Fortunately their purposes, their anxieties, their misinformation, their past experiences, their successes, their failures, their frustrations, their poor eyesight, their allergies, their unfulfilled needs, their perceptions of self--their all accompanies them into any learning situation. How do we use all of this? How do we set out to conduct a learning experience? What do we as adults--as leaders--do to get ready? How do we establish a learning environment? How do we help individuals establish, clarify, and attack realistic goals?

The perceptive teacher can do a great deal to facilitate learning. The teacher who feels, cares, plans, knows children, understands groups, uses many materials, diagnoses learning difficulties, frees inhibitions, involves the group, uses local resources, and analyzes his own progress is "on the way" to facilitating learning. The teacher who inhibits, frustrates, treats all children alike, fails to recognize differences is "on the way to thwarting learning."

Guidelines For Facilitating Learning

After we review all we seem to know about learning there seems to be a series of important guidelines which are helpful in facilitating learning.

1. To get myself (as teacher or leader) ready to receive the learner. As I know more about the individual, his background, his past experiences, his ambitions and perceptions, his community and its resources, I have a better chance of making contact with him. As I clarify my purposes, understand my job, review my expectations, I am better prepared to receive a new group.
2. To establish an environment which has overtones of warmth, excitment, ideas, acceptance, know-how, curiosity and to begin interaction between pupils and teacher at once.

Establish communication and make it a two-way process. Great emphasis on human relation factors avoids many learning hazards.

3. To clarify purposes to be achieved. This may be cooperatively carried on but it is essential that specific, clear-cut purposes be identified. These purposes must be realistic and appropriate for the maturity of the group.
4. To involve the learner in achieving goals and purposes. Learning is an active process in which exploration, discovery, refinement, summary, questioning, experimentation, analysis, discussion, comparing evaluating, summarizing, demonstrating, are all a part of the work.
5. To use many materials in many ways. Learning materials are numerous and varied. Materials are essential in establishing meaning.
6. To make continuous use of evaluative procedures. This is not to limit the process to tests, to pencil-paper devices--but to make use of many procedures designed to assess progress, to yield evidence of the consequence of work, and to identify blocks, barriers, difficulties.

To place emphasis on "How children learn" is a serious matter. It becomes necessary to focus on such factors as--

They learn what they live
They learn what they do
They learn with others
They learn as they are helped to clarify purposes
They learn as they have rewards
They learn as they have teachers who are guides

Research In Learning Support Current Beliefs

The beliefs, guidelines and key ideas presented may be documented by the great abundance of material in the literature. Bugelski (3, p. 452) states such principles are the harvest of thousands of experiments in the field of learning.

Another way of stating such principles was done by Thorpe and Schnuller (4), who attempted to summarize research in learning in terms of essential meaning for education. They have suggested five principles of learning and indicate that learning is facilitated and tends to be permanent when:

1. The learner is motivated--when he has some stake in the activity.
2. The learning is geared to the learner's level--when it is compatible with the learner's physical and intellectual ability.
3. The learning is patterned--when the learner can see meaningful relationships between the activity and the goal.
4. The learning is evaluated--when the learner has some way of knowing what progress he is making.
5. The learning is integrated with personal-social development--when the learner experiences satisfactory growth and adjustment.

Hullfish and Smith (5, p. 171) say that the "teacher is encouraged to study the psychology of learning and thus become more scientific in his teaching. On the other hand . . . it appears that what is needed is a theory of education (including a theory of learning) that will enable the teacher to continue to engage in the art of teaching, using the lore of the profession in a more consciously reflective manner."

Many educators now relate theory to behavior changes in people. Children respond in many ways, they respond with body and soul to their environment. It may be instinctive, it is a consequence of growth and maturation, or it is the result of learning. "From the point of view of the teacher it should prove more fruitful to think of 'meanings' rather than 'kinds of behavior' as the products of learning" (5, p. 179). "The term learning may then be applied to any process within which potential stimuli become meaningful, change meaning . . . are discriminated with respect to possible meaning, and the like" (5, p. 180). Followed by Dewey--"It is that reconstruction or reorganization of experience which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience" (6, pp. 89-90).

Hence Hullfish states that if we view meanings as basic building blocks of learning, then any event which results in a reconstruction or reorganization of a meaning pattern may be called a learning experience. Hence the importance of involvement, of purpose, of materials.

Nine propositions supporting the new teaching-learning process are described by Cantor (7, pp. 286-312). Note their similarity with factors described earlier in this report.

1. The pupil learns only what he is interested in learning.
2. It is important that the pupil share in the development and management of the curriculum.
3. Learning is integral.
4. Learning depends upon wanting to learn.
5. An individual learns best when he is free to create his own responses in a situation.
6. Learning depends upon not knowing the answers.
7. Every pupil learns in his own way.
8. Learning is largely an emotional experience.
9. To learn is to change.

This set of propositions reflects our understandings of growth, of maturity, of purpose, of motivation of guidance, of content, and of changes in the behavior of the learner.

A useful description of the teaching-learning process was developed by Philips and his associates at the University of Texas (8, pp. 161-173). They relate learning to living and focus on the nature of learning in the classroom situation. They shift the emphasis to the interactions of the teacher and the pupils. Specifically this involves:

1. Recognition of pupils' needs.
2. The teacher takes the lead in assessing motivational structure of pupils.
3. Recognition of the teachers' needs.
4. The pupil and teacher perceive tasks from a personal frame of reference-cues.
5. Cooperative planning and organization of learning tasks insures increased relatedness to needs.
6. The pupil and teacher see certain responses as being necessary to achieve goals.

7. The teacher has responsibility for selecting pupil-teacher activities designed to facilitate desired behaviors.
8. The pupil and the teacher perceive the consequences and evaluate such changes.

This plan suggests the need for diversity of motivational procedures and emphasis on planning and organizing learning tasks. Great importance is given to the necessity for a variety of evaluation procedures. Evaluation serves as a means of motivating and guiding future learning.

Seven conditions for learning were developed by Frandsen (9, pp. 286-288) from a careful analysis of learning theories:

1. Maturity and an appropriate pattern of abilities.
2. Teacher-guidance.
3. Practice.
4. Perception of effects.
5. Transfer.
6. Motivation.
7. Freedom from emotional disturbances in learning.

Again we find support and acceptance of the same basic ideas.

Symonds, in his document "What Education Has To Learn From Psychology" (10), places emphasis on motivation, reward, punishment, learning is reacting, whole versus part learning and emotion and learning. He places emphasis on two important generalizations:

"Child learns only what he is motivated to learn." (10, p. 1)

"Learning takes place only when the act that is performed is reinforced or rewarded." (10, p. 11)

As one analyzes research and literature in the learning field the recurring themes which Waetjen (11, pp. 80-88) formulated in a recent Research Institute for curriculum leaders seem evident. They are:

1. Preoccupation with emotional upset deters learning.
2. The modes by which one learns are unique.
3. Motives are learned and give direction to learning.
4. The source-emotional climate influences learning.
5. Learning is a complex process.

He further states as a conclusion for the work of the Institute described in the document that "learning is a function of the exploitation of one's uniqueness as a person--or that uniqueness influences learning and learning contributes to uniqueness." (11, p. 84)

And so it is well to close with emphasis on the individual. All that has been said has attempted to help individuals grow--to help them increase their knowledge and skill. Perhaps we might profit from Julia Weber Gordon's recent comment that much of the effectiveness of learning has to do with our helping people become committed--to have a purpose, to want to pursue it, to have the new behavior become habitual. Again we face the complexity of social class factors, of cultural patterns, of past learning, of commitment.

The 1962 period finds some schools, teachers, and others wanting to accelerate learning episodes by automated, vigorous, impersonal procedures. Many of these are planned for the "Gifted," "Able," "High I.Q." The machine does not smile, it does not diagnose, it does not really give approval, it is not human. We need much research to help us know how these procedures may be used as a means of helping individuals and of saving the time of teachers for other work with individuals. Much of teaching and learning requires real allegiance to human factors and to human values.

In our new curriculum book (12) Alice Keliher has a Chapter on "Learning That Lasts." Note the title and the implications it has for our work with children. "Learning that lasts is somehow life-connected. Learning that has quality is concept-connected. Learning for good living is value-connected."

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CULTURAL FACTORS INFLUENCING CHILDREN'S FOOD HABITS

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Reading sometimes can be discouraging, because by reading, a person learns that his best ideas have been stated already, and even better. I thought I knew what to say here, until I read the Proceedings of the Nutrition Education Conference held 5 years ago. So now I refer you to the paper by John Cassel, printed therein, entitled "The Social and Cultural Implications of Food and Food Habits (1)." Actually, nutritionists, social scientists, and others with a professional interest in food habits have had for nearly 20 years, ever since the days of the National Research Council studies in World War II, a good outline of the many influences on eating and of the resultant patterns of food consumption (2, p. 8).

Of course, knowing that age and regional origin and prolonged stress, for example, can affect a person's food preferences and eating habits is only the first step toward the essential knowledge of any specific practice. Such general knowledge and acceptance of principles does not tell exactly what combination of factors is operative in a given situation and especially it does not tell exactly what trends in eating and drinking can be reasonably projected into the immediate future. It is chiefly on the subject of certain current trends in U.S. cultural change and their likely effect on children that I want to speak here.

Let us start with something that is not brand new in our culture but that certainly is proliferating: the vending machine. Although in the United States it dates back to the 1880's, it was a slow-growing infant industry until the last 15 years, when it suddenly shot up. "In 1946, total vended volume amounted to $600,000,000. By 1960, this had grown to $2,586,000,000. The number of operating companies had increased from 3,500 in 1946 to 6,250 in 1960 (3, p. 45)." Although we have had inflation the more than 400-percent increase in value of business is not explainable by inflation. Moreover, even though the automatic merchandising industry sells other things besides food and drink, we all can see that food vending machines are not lagging behind other parts of the industry.

(Right here, I should stop to say that I am not presenting the merits or demerits of automatic merchandising. I am using it only as an example of cultural change that affects eating.)

You may wonder why I start with the vending machine. The answer lies in the basic nature of culture. A culture is not a mass or total of separate things and actions. A culture is an organic system. In concrete terms, it is a very complex system of behavior systems. In conceptual terms, it can be stated as either a product of action or as a conditioning factor of further action, since it is both.[1]

To understand customary eating and drinking behavior, therefore, we must see how it fits into the cultural system. But it is hard to talk abstractions and even more difficult to listen to them. It is easier to take an example, and it is more intriguing to try to work out the cultural ramifications and the individual effects of a new item or of an accelerating trend. We may not have firm evidence based on long research regarding the new thing, but at least it is highly visible (if puzzling), the field is wide open, and we have a challenge to understanding.

One effect of vending machines, and in fact of all forms of readily available self-service, that impresses me as an anthropologist is their encouragement of piecemeal eating. In much of the world, especially in technologically primitive cultures, children eat frequently, picking up

[1] The full definition, based on a definition by A. L. Kroeber and Clyde Kluckhohn: A culture is a system of behavior systems, which can be conceptualized as both a product of action and a conditioning factor of further action; essential to it are patterns, explicit and implicit, of and for learned behavior (overt and covert), in human groups acquired and transmitted largely by symbols; and in human culture, the system is guided by a core of traditional ideas and their attached values of purposes.

food as they go about their small affairs. They themselves pick fruit or shellfish; they beg or simply take leftovers or the parts rejected in food preparation, from any female relatives throughout large extended families, and they may even form picnic and cooking parties in which they pool the foods obtained by raid or blandishment.

In peasant cultures in which the chief food is grain, which requires cooking, and where the women probably work in the fields, it may be harder for a child to serve himself or to wheedle an adult into feeding him. Yet a child can munch on dry bread if nothing else is available.

In our own culture during earlier generations, however, for various reasons that you know, such as long hours of labor away from home, we develop a pattern of widely spaced meals, with piecemeal eating frowned on. Recently, though, snacks and coffee breaks have become part of our life, so that, aided by the refrigerator, the vending machine, and others of the newest gadgets, we are becoming paradoxically, like the simpler, less organized, less routinized societies in this custom of frequent, unplanned eating.

In this one respect, middle-class children come closer also to the behavior of the poorest urban and rural families in our own society. In such families, children of necessity may be fed haphazardly, for lack of enough cooking utensils, dishes, and chairs for all, or children may feed themselves on a catch-as-catch-can basis while their mother is at work away from home. It appears that the child from a more prosperous family, not from necessity but from choice and habit, now also eats here and there, now and then. (The details of the snack food pattern need not be repeated here since they have been studied and reported in nutrition journals. See also 4, pp. 151-152.)

Our children, outside institutional life in which eating is more controlled, are growing up with the expectation that the family doesn't just stop for gas--it stops for gas and pop. A person doesn't just bowl or skate--he bowls and has a cup of coffee or eats a hot dog. An adolescent doesn't just wait for a bus--he waits and eats a candy bar, or if a girl, she stops in the drug store to have a soft drink. Exaggerated? Only a little. Yet this trend was already underway when automatic merchandising sprouted in nearly every public place. The vending machine merely joined the trend and gave it a push. In fact--and this is an important point--it could not have grown so rapidly if there had not been developing already, for several reasons, a new eating pattern into which the machine could fit.

This illustrates another characteristic of culture: seldom does one pattern or system of behavior stand apart from, much less in contradiction to others. This casual eating partially fits into a larger pattern of eating away from home. From day nursery to clubs for the elderly, there are increasing opportunities to eat outside the home. People now eat in what were formerly variety stores, apothecary shops, and ladies' apparel shops. Youngsters eat--or at least they drink--at public playgrounds and gymnasia, and not from the good old drinking fountain, either.

One might think that eating in restaurants, at school and factory cafeterias, at lunch stands, and the like would broaden one's food experience, and there is some evidence that it does (5, p. 3). Counteracting this, however, is the impersonal mass feeding via machines which must be confined to the few most generally acceptable foods and beverages. Bland versions of chicken and noodles, Spanish rice, beef stew, with perhaps a moderately "hot" chili con carne for the deviant eaters, are the fare.

This, too, fits into and reinforces our national preferences, at least as indicated by the Quartermaster Food and Container Institute studies of the Armed Forces' food preferences (6, pp. 121-136, 140). As you know, fresh milk, hot rolls and biscuits, white potatoes, ice crean and cream pies, fried chicken, grilled steak are high on the list. The young recruits' best-liked foods, considered as a group, are notably bland. Where are the young men who like a rugged diet of mashed turnips, corned beef and cabbage, rye bread, codfish, greens, and rhubarb? The stokers of vending machines cannot afford to cater to the intellectuals and a few ethnic groups by presenting pumpernickle sandwiches or pepperoni sausage. Thus the child's or adolescent's timidity in trying strange foods is reinforced. Or, stating the situation in another way, the child's willingness to experiment is seldom tested by commercial purveyors.

There seems to be a related change into which the vending machine fits nicely and to which the machine gives added power. Both at home and away from home, it appears that we are consuming more and

more liquids. The machine is not well adapted to serving baked potatoes and carrot sticks, but it can serve either relatively dry things like peanuts, chewing gum, and small packages of cookies or else fluid or mushy things like coffee, root beer, and soft ice cream. I do not know that there is an avowed race between these two large classes of food, but if there is, I'll bet that the liquids are winning, with or without the help of machines.

Total U.S. milk production did decline steadily from the high in 1956 (124,860 million lb.) through 1957, '58, and '59, then rose again in 1960 although still short of 1956 production by nearly 2 billion pounds (7, 8. See also 9). More interesting to us right now is the per capita consumption of fluid milk, which, as you know, rose sharply immediately after World War II, then declined and fluctuated within narrower limits in the '50's. (We are not considering here the total consumption comprising butter, cheese, dry milk, etc.) The 1959 consumption of fluid milk and cream (348 lb. per capita) was higher than that in 1910 (315 lb.) but was exactly the same as in 1920 and a decrease from 1955 (352 lb.).

Filling the national tank, however, were other liquids. Frozen fruits and juices, consisting chiefly of the latter, were consumed in 1959 at the rate of 9 pounds per person, whereas in 1930, first year that figures were available, the rate was a half pound per person. Canned unfrozen juices (10.9 lb. per capita) had declined from the 1950 figure (13.4) but of course still stood higher than in the early days of commercial canning (half pound per person in 1910). At the same time, the consumption of fresh citrus fruits, apples (commercial), and other fruits (melons not included) declined from 1940 to '50 to '59. (A negligible increase of "other fruits" in 1959, after a steady decline.)

Tea consumption per person in 1959 (0.6 lb.) was nearly a half a pound less than in 1910 (1.0 lb.) but was the same as in 1950 and '55. The decline in tea drinking was compensated 12 times over by the increase--not total consumption but simply the increase - in coffee consumption between 1910 and 1959: 16 pounds per person in 1959, 9 pounds in 1910. (The most rapid increase occurred in the 1930's, not the '50's.) (10, p. 85.) Since all ages drink frozen fruit juices but most young children do not get coffee, per capita figures for the latter are deceptive and the two rates of consumption are not comparable. When a large non-coffee-drinking child population is included in figuring per capita consumption, then the true consumption by adults is masked.

The same is true regarding distilled spirits, malt liquors, and wines. Keeping this in mind, let us look at the figures on these. In 1950 and '59, per capita consumption of distilled spirits and of malt liquors was lower than in 1906-10 whereas wines had increased, as follows (10, p. 802):

	U. S. per capita consumption*		
	Distilled spirits	Malt liquors	Wines
1906-10 average	1.43	19.81	0.62
1940	1.02	12.58	.66
1950	1.02	17.26	.93
1959	1.14	15.28	.89

*Including domestic and imported products; data given in gallons except for distilled spirits, which are in "tax gallons."

Now we come to the type of fluids about which nutritionists are most curious, I suspect: the soft drinks. The consumption of these is most difficult to estimate, however, because of the great variety of bottle sizes and especially because sirups, not the whole constituted drinks, may be sold by producers, with no one keeping a record of the actual number of servings of carbonated beverages sold over the counter. We can get some indication of increase in consumption from the increase in money value of the product, especially when this is compared with value increases in other foods and beverages.

According to the 1954 U. S. Census of Manufactures, the value of shipments of "bottled soft drinks" (including sirups for making soft drinks but excluding cider, fruit juices, and flavorings) was $1,113 million. (Merchandising is excluded, but the figure represents delivered value, "for the most part," since manufacturers operate delivery services.) The percent increase in the early 1950's was greater than that of beer and ale, for example, so that there appears to have been not merely an increase in money value of the product but a real increase in the consumption of soft drinks. To me, most surprising is the fact that soft drinks were worth over $100 million more than the value of shipments of the entire confectionery industry,

including salted and roasted nuts. This comparison is shown by the following figures (11, pp. 20F-12 and 15, 20 G-1 and 2):

	Value of shipments
Bottled soft drinks	$1,113,000,000
Candies and nuts	992,597,000
Chewing gum	153,524,000

Unpublished estimates for a later period, prepared on request by the American Bottlers of Carbonated Beverages, show the annual production-consumption of bottled soft drinks to be as follows:

	Total value (millions of dollars)	Number of bottles (millions)	Per capita consumption (bottles)
1955	1,252	30,358	184.2
1959	1,633	35,629	199.8
1960*	1,698	25,437	192.0

*Subject to revision.

Finally, there are the weight-reducing drinks! If anyone can give the latest figures on those, I suspect that all of us will be interested.

In summary, at least through 1959, Americans have been using a little less of fluid milk, tea, and beer and fresh fruits but considerably more frozen fruit juices, coffee, and soft drinks. It is ironic that in this country which makes such great effort to provide pure drinking water, where one need not drink tea or beer in order to get a safe drink, we are not satisfied with good water but must have it jazzed up with carbon dioxide, sugar, and flavorings. But our main point is that the child is encouraged on every side, by every conceivable merchandising device, to consume more liquids other than water. The physical effects of this cultural trend? You can answer that better than I.

Another effect of our self-service merchandising is an emphasis on individual choice--not, however, large choices between basically different types of food but small choices. The cellophane-wrapped assortment of small boxes of dry cereal and the machine that vends small packages of cookies and crackers or an assortment of four soft drinks provide good examples. The child at the breakfast table with the array of cereals in front of him is not choosing between bacon and corn flakes, for example, but merely between one kind of flakes and another kind of flakes.

Speaking of the family table, I am reminded of my vision of the devices that we will have when the machines now in use in public places are adapted for the home dining-room. There will be at the side of the room a handsome ovenlike machine with, on the top level, compartments for heating cans of soup, vegetables, baked beans, etc.; on the next level, gadgets like milk-shake mixers for heating and beating dried mashed potatoes, gravy, or quick-cooked cereal; and on the bottom level, a grill for hamburgers and hot cakes. The adolescents' dream! Father will have beef noodle soup, mother will have mushroom soup, Johnie and Mary will have cream of tomato soup, and so on through the meal.

This would be a natural application of the supermarket pattern or the supermarket complex in our culture. Here in Washington we have several drug store chains. All the large stores in any one chain have the same goods so that by surveying one store, a person gets a good idea of the merchandise in many stores. In a typical emporium of one chain, I recently counted, all on open counters, the varieties and sizes of packaged or boxed candies and nuts (no cookies), excluding candy bars, gums, suckers, and rolls of mints, with a price ranging from about 25 cents to $3.00. The number shocked me: 172. The varieties of candy bars, gums, and "mints" (excluding cough drops), sold separately, not in boxes, numbered 106. (On a separate counter were 29 varieties of "dietetic" candies.) A large and typical drug store in another chain was similarly surveyed the same week. It had 135 packaged or boxed candies and nuts and 103 bars, chewing-gums, and "mints." The price range of this class of goods was 4 cents to 15 cents, within the reach--literally and figuratively--of nearly every child.

In our apparently rich culture, part of the range of choice is illusory and misleading. We are not nutritionally much better off for having three kinds of lettuce on sale at the same time in the same store, especially if all come from the same region and association of producers, thus eliminating the advantages of competition. If people are willing to eat either rutabagas or turnips--one this week and the other next week--what is the advantage of having both in the vegetable bins at one time? It is more important for a child to choose between a candy bar and an apple--and to have both equally available and tempting--than for him to choose among 12 chocolate

bars, in reality choosing only between a gold wrapper and a silver wrapper.

In studies of dietary likes and dislikes, it has been found that there is, fortunately, a difference between preference and acceptance, between preference and convenience as criteria of selection (2, p. 38; 5, p. 38; 12). Whether from rationality or from laziness, it appears true that normal Americans will accept things that they may not prefer but which are convenient, inexpensive, and meet minimum standards of cleanliness and palatability. Catering to small preferences is of course only a sales technique.

An economy that can offer all the things that we have been discussing--carbonated and sweetened water instead of plain water, abundant small choices, frequent snacks, fancy merchandising--is of course an economy of plenty. Any kid with a dime in almost any public place can get a beverage and probably also more solid food, and most youngsters have dimes. If he is momentarily free of any specific adult who has authority over him, society places no restriction on him, short of purchase of intoxicants, which are not yet vended by machines. (The problem of vending cigarettes to minors has not been treated so firmly.)

Another pertinent characteristic of our economy and in fact whole culture is its lack of a bargaining principle. On the European continent, for example, much food still is bought in open markets in which there is an opportunity for bargaining. Americans, in contrast, still bargain on big things like houses but seldom on small purchases. The vending machine reinforces this trait. It won't give the would-be bargainer a 25-cent item for 21 cents. The child thus learns to buy food on an all-or-none basis

Finally--and this may be the most important of the cultural developments to be mentioned--the whole complex business of food production, processing, and marketing is removed farther and farther from the consumer's experience. City children, in fact many farm children also, since their families buy bread, canned fruit juices, and other prepared foods, have no experience of the labor and organization required to bring food to them. Hence they do not appreciate the intrinsic value of food unless they happen to have been genuinely deprived and hungry. They do not know in their own bones and nerves the physical danger of fishermen, the agonizing stoop labor of vegetable pickers, the anxiety of citrus fruit growers when a freeze threatens, the time-consuming work of housewives peeling or cutting fruit to make apple butter or marmalade to last the winter. We seem also to have a decrease in cooking skill and probably a decrease in appreciation of the work and skill involved in good cooking (5, p. 3).

To anyone who has worked in an underdeveloped area where food-getting involves so much physical labor and so much frustration, the U. S. consumer's ease in obtaining food as well as other goods provides a startling and to some of us a disturbing contrast. In short, for the middle and upper classes in urban and suburban Canada and United States, there have been in food habits strong elements of self-indulgence, of whim, compared with most of the world's population. We need do very little work in food preparation; we need not wait for a food while it goes through a series of processes; we need not be confined to one food for long periods. If a child does not feel--I do not mean "know cognitively" but "feel emotionally"--that food is precious, one wonders whether the child can readily understand or sense that any specific food, or food element, is vital to him.

Let us see now how people have gone about and how they might go about the education and influencing of the child on the subject of eating.

Nutritionists are united, I suppose, in believing and saying that children should eat less of the sweets, certainly that they should not consume sweets to the exclusion of more protective foods. There are various ways that this might be done, but probably won't be. We have seen how our technology, economic abundance, customs, and values involved in merchandising and consumer purchasing are related to dietary habits. So one way of decreasing sugary goodies would be control at the source. This might be undertaken in some countries but it will not be in this one. The reformers would have to "take on" the soft drink, confectionery, and baking industries; and, as we have seen, the first two alone constitute two billion dollars worth of wholesale business. With the food industry stand the paper and packaging industries, the importers of sugar and chocolate, and various lesser ones that together can be powerful.

Then there is the advertising business, which would have to change an important part of the content of advertising. In 1957, the total volume of advertising, including

newspapers, magazines, radio, television, and direct mail cost 10,310.6 million (13, p. 526). Not all of this pertained to food and beverage, of course; yet any industry so massive and with so many specialized parts and strong connections is almost impossible to move.

Finally, there is retail merchandising. At the very beginning was mentioned the size of the automatic merchandising industry, a relative newcomer in the field but whose trade is already worth $2 1/2 billion. The vending industry's trade association, for public relations, policy formation, and general industry guidance, which started only 25 years ago with a budget of $9,000, had a budget of over $500,000 in 1960 (14).

We are not by any means suggesting or even ruminating on the decline or end of these industries but are, instead, contemplating the feasibility of changing the types of food produced or vended, of making a few substitutions; for example, substituting dried fruit for some of the candy bars (not all) or selling low-calorie cookies instead of high-calorie ones. Yet, to make any significant change in diet at the merchandising source, an educational group would have to tackle all these giants.

What is the alternative, the one that has been accepted? We work, instead, on the smallest, most defenceless unit in the system: the individual child. Or the next largest unit: the family. The burden is on the ultimate consumer to make the necessary choices; then his choice affects, in some cases controls, all the links in the chain back to the producer. Those links are not, however, blind or inert "intervening variables." All intervening groups, including parents, teachers, pediatricians as well as advertisers, and venders between food producers and consumers, are trying--although not all equally hard--to influence that ultimate food choice.

Our economy being what it is, how can we best teach children to deal with it, or what should be taught them? First, they must learn to deal with multitudinous inducements to buy food and drink, not on a feeling basis but with practical knowledge. It is not enough merely to know what are good and bad--one must know how to get the better and reject the worse. Since we have a consumer-oriented culture, the consumer is king. But in many cases he does not realize the nature of his power or the strength of it. This is especially true of the child consumer. Young people can be taught not to be suckers for gimmicks, for fancy packaging. Or, to state the case positively, they can be taught to figure things out for themselves regarding food purchases, and to be proud of their technical knowledge. Not only handling food is a skill and an art, but buying food is a skill and an art (15, p. 549).

Purchasing-behavior is ever more important since most food is now bought ready to eat or nearly ready. Consider all the frozen and canned vegetables: housewife and children needn't even know how to string beans, let alone know how to pickle or dry them as was done a hundred years ago. Today, however, they do have the opportunity, not available to our grandparents, to know the relative scientific merits of canning, freezing, and drying of specific foods--technical knowledge that anyone who is "smart" should have.

Since Americans are not very good bargainers and since most foods are packaged, we must make purchases on an all-or-none basis. A child cannot ask for 6 cents worth of a 10-cent candy bar but can buy raisins or coconut or something else instead of a bar. So, more real choices should be available to the purchaser. Perhaps better candied fruits could be produced. Perhaps powdered-fruit drinks made from real fruit, with the vending machine reconstituting the liquid by addition of water, could be perfected. (I wish that I had the food technologist's knowledge of the possibilities.) In any case, the young person should be taught the problems, limitations, and opportunities of marketing, from the standpoint of the purchaser.

(Grammar school children can "play store," act out marketing scenes in which they make food selections and discuss the bases of choice. This is not easy pedagogy, but it is important, like teaching the skill and habits of a good automobile driver. In more school systems, classes should be taken to large bakeries, slaughterhouses, any available food-processing centers as routinely as they are taken to museums. They should be shown films of workers in the fields or orchards, films not produced by trade associations that often put a gloss on the whole process of food production. As children grow older, they can get more technical knowledge: How is food handled in transit? What are the standards and limits regarding use of insecticides and additives?)

Second, regarding habits, attitudes, and values, young people should get demonstrations of the value of eclectic tastes, so that

they can travel comfortably and can be economically mobile with less strain. Since we have become an extremely mobile people, both geographically and socially, it is important that young people not hinder their own adaptation and adjustment because of provincial tastes. They must not be concerned with small dislikes and small choices, such as accepting candied carrots but refusing to eat baked yellow squash.

American military and civilian employees overseas and military at home have been--at least until recently--unnecessarily insistent on having everything "American." If overseas PX's had a larger proportion of local foods along with the foods imported from America, if local dishes were served in messes more often, there undoubtedly would be complaints. Yet with campaigns to interest people in local dishes as prestige items, they might be acceptable. Young people are especially susceptible to shaming. Being shamed for persistent juvenile food preferences or for provincialism probably can accomplish more than straight-faced and straight-backed education.

Culture is strong, pervasive, subtle, and complex. It is the common component in the behavior of all of us, including the little prince of our economy, the child consumer.

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THE INFLUENCE OF MASS MEDIA ON CHILDREN'S FOOD HABITS

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It is a privilege to participate in this conference which is examining the problems associated with the nutrition of children and young people with a view to appropriate educational measures. I am impressed with the breadth of thinking revealed by the conference agenda which considers such associated but significant matters as how children learn, and the factors which influence children's food habits.

I have been asked to deal with the influence of mass media on children's food habits. It is suggested that I consider not only the impact the media may now be having but also the possibility of utilizing them in a broad program of nutrition education to bring about better food habits among children and youth.

Let me say to begin with that there is little if any direct research on the influence of mass media on children's food habits. What one has to do is to examine the research dealing with other types of effects upon children, combine this with first-hand observation, and make some educated guesses.

What I shall attempt here is to give you a better understanding of how the mass media operate in relation to behavior, share with you some of my hypotheses, and hope to stimulate your own thinking.

The mass media consist of television, radio, movies, books, magazines, comic books and newspapers. In addition to their primary content, some of them--that is television, radio, magazines and newspapers--contain advertising material. How important are these media in the lives of children?

Importance of Mass Media to Children and Youth

If we may judge importance in terms of the time which children spend with mass media, we must conclude that they loom large in their lives.

In the first place, exposure begins very early. By 2 years of age, 14 percent of children studied by Wilbur Schramm and others in San Francisco were making regular use of television. At 3 years of age, 37 percent were using television, 20 percent were using radio, 8 percent were attending movies, 58 percent had books read to them, and 11 percent were looking at magazines regularly.

In the second place, the mass media consume a high proportion of the time of children and adolescents. By the time children reach the second grade, as the San Francisco figures show, they are spending 2.2 hours each week day with television viewing, 1.1 hours daily with radio, going to one movie per month, reading 1.1 books per month outside of school, averaging 0.8 magazines read per month, averaging 0.6 comic books per month and 3 percent were reading newspapers (presumably comic strips). All of this mass media activity totals 25.7 hours per week.

All recent studies indicate that the greatest amount of exposure to the mass media occurs somewhere around the sixth to the eighth grade. In San Francisco at grade six, this amounted to 36.9 hours per week. The period comes at early adolescence when the youngster is free of early bedtimes, has acquired reading skill, is just entering into sex awareness and the social utility of popular music, and yet is not heavily burdened either with homework or dating activities. By the twelfth grade television has decreased but radio has increased. Newspapers which began to be important at sixth grade level, also have increased in importance so that the total mass media time is down only slightly to 36.2 hours per week. But compare these figures with the 30 hours spent in school and one senses the importance which young people attribute to the mass media.

How is this time distributed among the mass media? At grade six, 60 percent of the almost 37 hours per week is taken up with television and 20 percent with radio. Movies consume only 2 percent; books 8

percent, magazines 2 percent; newspapers 5 percent; and a negligible amount is devoted to comic books.

One would expect, then, that the greatest influence upon children and young people would be exerted by radio and television which together consume 80 to 89 percent of mass media time. Let us, then, pay particular attention to broadcasting as we consider possible effects upon food habits.

Direct Effects of Broadcasting

Two types of direct effects upon food habits of children and youth can be attributed to broadcasting. The first is represented by the direct response to advertising. The second relates to food habits developed as an accommodation to radio and television.

Interestingly enough, an examination of the available research literature fails to turn up studies dealing with the direct effects of radio and television advertising upon children's food habits. The highly important studies by Wilbur Schramm and others published last year[1] neglect this area of investigation. Similarly Joseph T. Klapper's summary of the effectiveness and limitations of mass media[2] specifically excludes "the media as instruments of consumer advertising." "Not only is much of that vast research privileged," says Dr. Klapper, "but the lion's share presents findings which can be regarded as valid only in reference to the specific situation researched and which are in general too precisely 'applied' to be particularly useful for" his volume.

We need not be in the dark, however, as to the findings of this "hidden" research. The studies indicate conclusively that broadcast commercials dealing specifically with food and drink to be consumed by children and youth are effective: the products are sold in such quantity as to satisfy the sponsor, the advertising agency, and the broadcaster. The evidence is overwhelming that contracts are renewed with regularity, that new products are launched with a heavy emphasis upon broadcast advertising, and that parents and children alike are persuaded to buy products which radio and television purvey so enticingly. Data consist of sales records plus observation of children and family life.

It is safe, I am sure, to conclude that the mass media do influence directly the eating habits of the young through the promotion of specific products. We can conclude also that the direction of the influence is not necessarily desirable since not all of these products are considered helpful components of youthful diets and others are not beneficial in the quantity and frequency that often result.

It is well to remember, however, that advertising of this sort is more a reminder, a nudge, as it were, than a converter. It is successful only as a reinforcement of existing mores, customs and values. It does not change the customs and habits of individual children which are influenced much more by immediate groups such as their peers or their families. But it encourages behavior already sanctioned by the group.

The second or accommodating type of change in eating habits consists of adjustments made by children and their families because of the presence of television. Some families eat from trays in the living room in order not to miss a favorite program. Some children bolt their meals in order to rush back to the television set. Snacking during television viewing is a common type of behavior among both children and young people. Perhaps frozen TV dinners were invented as a response to the combination of "tray meals" and busy mothers. How significant these changes in food habits are would have to be determined by research. They are not as common as they were during the novelty period of television. But they still exist in many families.

It is suggested by Dr. Schramm that the mass media can be classified in two types: the print media and the audio-visual media. The print media include books, magazines, and newspapers and are used mainly for serious and realistic needs. The audio-visual media are used largely for entertainment, fantasy, and escape from reality. In the younger years, as we have seen, the audio-visual media predominate and are used by children largely for entertainment. Educational effects, then, are primarily indirect; they consist of incidental learning. Children are conscious of the information and education they obtain from radio and television but most of them wish it to be kept in relationship to entertainment--to be a byproduct.

[1] Schramm, W., Lyle, J., and Parker, E. B. Television in the Lives of Our Children. Stanford University Press, Stanford, Calif. 1961.

[2] Klapper, J. T. The Effects of Mass Communication. The Free Press, Glencoe, Ill. 1960.

What Children Use Mass Media For

It is extremely helpful, in thinking about the mass media, to think of them not so much in terms of their effects upon children, as to consider what children use mass media for. What ends do they serve for boys and girls? Since they spend so many of their waking hours with the mass media, it is apparent that the mass media have distinct value for them.

The first value which children clearly recognize is that of entertainment. Mass media provide fantasy, escape from frustrations and boredom, and identification with exciting and attractive people. As Schramm points out regarding television. "By the time they are three years old, they already are committed to favorite programs. A little later they begin to sit with absorbed faces, lost in the events of the picture tube. They astonish their mothers by being on time for a favorite program, although completely unable to be on time for anything else. They set up idols and find leaders to imitate on television."[3] Older youngsters take television more in stride, but consider it an entertaining relief from "boredom."

The second use of mass media is to provide information directly and also incidentally, about the world, about other kinds of people, about older children and adults and their modes of living, about ways of behaving in new situations, and about culture and peer group expectancies. As a child grows up he is being prepared to take his part in society. He wants to be hep--to be able to play his various roles successfully. Unconsciously and consciously he studies and imitates the behavior of others, he masters the norms, the values and the customs of his class, his group, and his society. The mass media afford him the opportunity to see and learn about these matters which are so important to him.

Basically, of course, the question is whether what he learns is accurate and helpful. In some respects it probably is accurate; in others it is merely exaggerated. But in some essential respects it is probably grossly inaccurate. Schramm, for example, says, "There is no doubt that television's picture of the world includes an abnormally high proportion of sexy women, violent acts, and extra-legal solutions to legal problems. There is some reason to think that it contains also an over representation of inadequate fathers, of get-rich-quick careers, and of crooked police and judges."[4] And 10 months ago at the White House Conference on Children and Youth, I suggested that from "the mass media boys and girls acquire an image of America in which material values are supreme. Success in life consists of a high-income job with maximum security. It is displayed by the abundance and costliness of possessions--cars, homes, clothing, appliances and pleasure appurtenances."

The third use of the mass media is as a social utility. Television and the movies provide something to do on dates. Radio keeps the young person up to date on popular songs. Various media provide things to talk about.

How then, are food habits affected as children and youth use the mass media for entertainment, information, and as a social utility?

Indirect Effects of Mass Media

What children and teenagers gain indirectly from their intense exposure to the mass media are primarily ways of behaving which seem to them to fit into the group-sanctioned customs and mores with which they are familiar. The mass media serve mainly to intensify existing habits and to stimulate conformity by making it very clear what the expectancies of the culture are.

They see, for example, stereotyped representations of middle-class family life in family-situation comedies on television and in the comic strips. Most boys and girls identify themselves with the children in these familiar-seeming situations and accept the ways of living which seem to be approved. This may well include what to eat, when to eat, and how to eat it. That this identification with peers of their own age or a little older stimulated emulating behavior has been amply shown by research and by simple observation. The types of behavior imitated are not necessarily limited to those intended. Speech, mannerisms, gestures, and dress as well as values are adopted, sometimes to the dismay of parents.

It appears that the intensification of stereotypes may sometimes go to absurd lengths. Thus a television or radio series,

[3] Schramm, Lyle, and Parker, op. cit., p. 57.

[4] Schramm, Lyle, and Parker, op. cit., p. 155.

or even a comic strip, features a young adolescent who is deliberately created as an exaggeration of the teenager. Continued exposure of children and young people to this burlesque symbol of themselves ultimately leads many of them to accept him as representing erratic, but normal behavior, to be in turn emulated. Thus the stereotype becomes the reality.

A second type of figure represented heavily in current mass media is the adult hero figure--athlete, sheriff, cowboy, detective. Here again there is adoration and emulation, which, as might be expected, has been utilized by commercial sponsors to stimulate the sale of products to the young (and, of course, their parents). These include cereals and other foods. Not only do children respond to the direct urging of these hero-figures with regard to food and drink; they also imitate their behavior in detail.

Adolescents are probably much more affected by current entertainment figures--particularly young recording stars not much older than themselves. They see these glamorous figures at television "dance parties," in network variety programs, and in the movies. They read about them in newspapers and popular magazines. Enormous power is exerted by these modern hero figures (or their managers and press agents) over teenagers' habits and predilections in food, dress, recreation, courtship, and values.

And finally, youngsters of all ages gain their impressions of approved adult behavior from the mass media. Orange juice and coffee breakfasts, cocktail parties, night clubs, and drinking habits in general, coffee breaks--all such phenomena are carefully observed and noted for future reference. As they grow into adulthood they tend to take on the customs, habits, and mores of the adults they have observed on television, seen in the movies, or read about in the press.

One caution, however, in interpreting the imitative behavior of the young. Present research makes it very clear that what is observed is filtered through the standards of groups and group norms--the family, the peer group, the church, the school. With young children it is the family and the immediate neighborhood that conditions their response to the mass madia. With older children it is the peer group whose influence is so determining. These groups in turn are influenced by cultural trends, by religious values, by significant events, and most of all, by the social class to which they belong. For mass media are ineffective when the values they embody are in conflict with those of the primary groups to which children belong.

For example, lower class boys and girls often do not identify themselves with the middle class heroes of the mass media but rather with rebels from middle class standards who may, in fact, be the "villains of the piece." And lower class adolescents, who find great difficulty adjusting to our predominately middle class school situations are the enthusiastic followers of those teenage idols who, by dress, haircut, and behavior, are clearly lower class in origin.

These lower class boys and girls are often joined by rebels from the middle class--in considerable numbers in early adolescence, in lesser numbers later--as dissenters from the disciplined, postponed pleasure values of the middle class. They find a more congenial atmosphere in the relaxed, pleasure-now values of the lower class.

Using the Mass Media for Nutrition Education

The mass media can, of course, be used formally for educational purposes, and they can be used informally to further education. Let us assume that a program of nutrition education will be adopted and carried out by the schools using textbooks, television, films, radio and other audio-visual materials. Our consideration here should be with the use of mass media for out-of-school education of children and youth.

Both a direct approach and an approach through incidental learning should be adopted, if full use is to be made of the mass media. It should be looked upon as a saturation effort.

We pointed out earlier that mass media were of two types, the audio visual (used largely by young children for entertainment) and the print (used for serious and realistic ends). There are now rather clear indications that by early adolescence children tend to divide themselves into two groups--those more interested in reality and those more motivated toward escape, fantasy, and entertainment. Schramm concludes that orientation toward reality is a stage in maturation which a majority of children achieve in early adolescence. Others however never achieve this to a high degree but remain oriented towards escape and entertainment.

The reality-oriented children and youth not only tend to prefer the print media, but they use the other media for reality purposes. They become the viewers of "serious" programs on television--documentaries, educational program. They seek movies dealing more deeply with life and its problems.

Such boys and girls can be reached for nutrition education by programs on educational television stations, by documentaries on commercial stations and by thoughtful articles in popular magazines. Even young children of this type can be reached by popular programs such as the Bell Telephone System has featured from time to time on science subjects.

The larger group consisting of most of the very young children, and a considerable number of older young people will need to be reached through incidental learning in the mass media. And these efforts must go hand-in-hand with activity in primary, face-to-face groups. I do not doubt that, with proper approaches, our mass media institutions (publishers, broadcasters, motion picture producers) would cooperate in a large-scale enterprise to educate American children and youth in nutrition. But to be effective with the largest proportion of boys and girls, the new behavior exemplified in the mass media would need to be demonstrated and favorably considered in all manner of primary groups--nursery schools, boys' clubs, 4-H Clubs, Future Farmers of America, scout groups, settlement houses, athletic leagues, neighborhood clubs, summer camps, youth canteens, church groups, and so on. Schools, both in classrooms and in their own eating arrangements, would need to embody the desired practices. Such an effort should give conscious attention to the matter of class customs and mores. The essential nutrition education would need to be embodied in lower class terms and circulated through lower class opinion leaders, lest the message fall on deaf ears.

With such a concerted program, the mass media in out-of-school time, backing up the formal effort in the classroom, and the mass media in turn, related to an organized effort through the primary groupings to which children belong--such a concerted program could be effective in bringing about major improvements in nutrition.

But, as I have tried to indicate, what the mass media do is mainly to intensify the habits and customs of their audiences. They can be most effecting in changing such behavior when they are a part of an effort involving also primary, face-to-face groups.

FACTORS INFLUENCING CHILDREN'S FOOD HABITS--HOME AND COMMUMITY

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The theme for our meeting this afternoon is "Factors Influencing Children's Food Habits." And of all the factors which may influence children's eating habits, it seems to me that there can be little doubt that the family is the most important. Food habits learned early exert a powerful influence on the child at later periods of life and are among the most difficult of any habits to change. It is important, then, to consider how the family influences the child's acceptance or rejection of food.

Closely associated with the child's likes and dislikes for specific foods, is the whole question of what food in general means to the child. And this too is strongly influenced by early experiences in the family. If he has become accustomed to eating when under stress and to use food as a means of primary satisfaction, he is quite likely to continue to do this, sometimes to the extent of extreme overeating. On the other hand if food has been associated with unpleasant experiences, eating problems and digestive disorders may be the result.

While family relationships are a primary influence on a child's eating habits, it is difficult to separate the influence of the community and community customs from the influence of the family so I am glad that we can consider these two very important aspects together.

The child's food habits and practices develop in a small group situation in which

each member of the group influences all the other members. We often think of parents influencing children but forget that children influence parents quite as much. Likewise, children influence each other so that we have a child developing attitudes and practices in a small group in which each member is acting upon every other member of the group. The child's refusal of a food may influence what the mother serves; or the adolescent daughter who is taking home economics in high school and learns something about principles of nutrition may attempt to influence the food habits of her whole family. The mother may become convinced through the mass media or otherwise that some food is good or bad for her family and may attempt to change their food habits accordingly. The presence of an allergic child or a chronically ill member of the family may upset the eating patterns in the family group. Because the situation is dynamic there is always the possibility of change and this change can be introduced through any member of the family.

Family food patterns are influenced also by the social class to which the family belongs, and by religious customs. Certain kinds of foods are traditional and some are prohibited or seldom used.

Another important influence operating through the family is our rapid changing food technology having to do with the type and preparation of foods as presented to the family members. With the more widespread distribution of rather standardized food products it is likely that our eating habits, at least within the range of television and the supermarket, will become more standard from family to family.

With these few general remarks then I would like to consider briefly each of the stages of the child's development and some of the family and community influences which may be important during that particular stage of development. Many families will have children in several stages at the same time and certainly the family whose children have reached the later stages of childhood, with most of the children in high school, have quite a different problem from families whose children are largely in the infancy and preschool stages.

Infancy

Let us begin, then, with the period of infancy and think in terms of the family influences on the eating habits of the child between the ages of birth and about 18 months.

One of the factors that has impressed me recently is the decrease in emphasis on breast feeding. Several years ago we were led to believe that many of our problems of personality development in children might be solved if we could just get mothers to breast feed their infants. But the trend that is brought out by recent studies is that the percent of mothers breast feeding their children is decreasing.

A study by Jackson, Wilkin, and Aurbach as reported in "Pediatrics" in 1956 indicated that the present of mothers breast feeding their babies dropped to 82 percent in 1942 to 49 percent in 1946. In the same periodical, ("Pediatrics") for 1958 a comprehensive survey of 1,904 hospitals covering approximately $2\frac{1}{4}$ million births and reported by Herman Meyer indicates that there has been a decrease from 38 percent in 1946 to 21 percent in 1956 in the percent of infants leaving the hospital maternity nurseries with breast feeding. This decrease holds for the United States in general and for the several regions studied.

In the study by Miller and Swanson on the "Changing American Parent" published in 1958, it was reported that of the Detroit area families interviewed only 10 percent were using breast feeding as the sole method of infant feeding, while 41 percent were using bottle feeding exclusively. Approximately 40 percent began breast feeding and then changed to bottle feeding while about 7 percent used both bottle and breast from the beginning.

Sears, Maccoby, and Levin in their study of "Patterns of Child Rearing" reported in 1957, indicate that of their sample taken in Boston, 60 percent of the children were not breast fed while approximately 12 percent were breast fed for less than 1 month and the others for varying periods from 1 to 9 months. These children were 5 years old at the time their mothers were interviewed by Sears and his associates and the mothers were asked to recall practices of child rearing back to the period of infancy. There is, of course, some question about the accuracy of the length of time the child was breast fed, but the mothers could be expected to recall fairly accurately whether or not the child was breast fed.

Sears and his coworkers studied some of the factors associated with breast feeding in the child's later development. One of their conclusions is that there were just as

many feeding problems in children who were breast fed for 3 months or more as in those who were not breast fed. About 20 percent of the children in this group were judged to have had moderate or severe feeding problems. These feeding problems were found to be unrelated to whether or not the child was breast fed, the age when the child was weaned, whether the feeding was on a self-regulating or on a scheduled time, and to whether or not the child was upset over weaning. They did find that feeding problems were positively related to severe toilet training practices; to the mother's low permissiveness for the expression of aggression toward the parent; to high use of punishment; and to low mother-warmth toward the child. This is supported by another study that was made in Edinborough and reported by Cecil Mary Drillen, in "Archives of Diseases of Children" in 1949, which found that the incidence of prolonged feeding bottles and sleeping problems was five times as high in the children of mothers previously noted as over-anxious.

In a study by Langdon and Stout of well-adjusted children during the grade school period, no difference could be discerned as to the type of feeding of these children. Some of the well-adjusted children had been breast fed and some bottle fed and some were fed on demand and some on a strict schedule. Thus, the fact of the type of feeding or the method of scheduling seems to be much less important to the child's later development than the personality of the mother and her relationship with the child. If she is tense and overanxious or lacking in warmth, feeding problems are more likely to develop.

Regardless of the type of feeding or the method of scheduling, the child develops certain attitudes toward food as a result of whether his needs are satisfied or whether they are not satisfied; whether sucking becomes an extremely satisfying thing to the child and he wishes to prolong it. There is some evidence (Sears) to indicate that if sucking or nursing is prolonged unduly beyond the first year that it may be much more difficult for the child to give up the oral satisfaction involved than if weaning to cup and soild food takes place earlier. In this early period much of the mother's love and affection for the child is communicated to him through her handling of the feeding situation and the initial experience which the child has with associating food with the warmth and acceptance of his mother may be influential in determining later attitudes toward food as well as toward people.

What he is fed and how he is fed will probably be determined pretty largely by the pediatrician or by the well-baby clinic to which the child is taken or by the customs in the community which influence the young mother. The presence in the market of easily available prepared baby foods and the influence of pediatrician in urging the earlier introduction of foods other than milk in the diet have resulted in an effort on the part of mothers to introduce different kinds of foods at an increasingly earlier age. A study by Virginia Beale reported in "Pediatrics" for 1957 indicates that the age of transition from prepared foods to the family diet has decreased during the period 1946-1955 from 2 years to approximately 13 months. Thus, in the latter part of this period of infancy, the child is beginning to be introduced to a much wider variety of foods and is beginning to be more influenced by the likes and dislikes and the attitudes of other family members toward food.

Early Childhood

The period of early childhood which extends roughly from 18 months up until the time of entrance into school is an extremely important time, perhaps the most important time, for the development of food habits.

This is an imitative age. The child wants to do things like big brother or sister or like mother or daddy. His father eats sugar on his tomatoes so the preschooler also wants to put sugar on his tomatoes. (Are they perhaps more likely to imitate when we are not making a desperate effort to get them to imitate us?) The child shows considerable interest in what other members of the family eat and the way that they eat it. He even experiments with eating the dog's or the cat's food at this stage if adults do not intervene.

This is the age in which the child is cutting teeth and when food that is hard to chew may be rejected. He prefers colored food to colorless. The texture of the food is important to the child. Things that are stringy or have a difficult texture may be rejected on that account.

During this period the rate of physical growth is slowing down so that the child's appetite decreases and he needs less food. The mother may have come to think in terms of the extreme importance of the child's eating large quantities of food at

each meal and when the child no longer needs or wants so much food, the mother may show extreme concern. If the child senses that his eating or not eating is extremely important to the mother, this may set the stage for a power struggle in which the child uses the weapon of eating or not eating in order to control the adult. Many a preschool child has discovered that fascinating things happen and many rewards are available if he refuses food or accepts it with great reluctance.

Here again, as reported earlier in connection with the Sears' study, the mothers most likely to find themselves involved in this kind of power struggle with their children are mothers who make high use of punishment and who have a low permissiveness for the child's expression of aggression, and who are fairly severe in their training methods. This type of mother may find that her excessive methods of control provoke the child to use an effective weapon against her and that is to stop eating. It was encouraging, however, that Sears and his coworkers found only about 20 percent of the mothers of these 5-year-old children reported that their child had had either a moderate or severe feeding problem.

Children go through many phases of likes and dislikes for food. They may want to eat the same food for long periods of time and then as suddenly not want it for a while. At the nursery school we stress learning to eat rather than learning to like a wide variety of foods. Children sometimes have to get used to having foods presented and having them around a great deal before they come to accept them. If food is enjoyed by the family and no great stress is placed upon any one specific food or upon any large quantity of food consumed, the child will usually come to accept a fairly wide variety of foods provided these are made available under reasonably good circumstances.

Children this age are developing eating skills and while it is important that we begin to stress a minimum of manners acceptable to the adults in the family, if the mother can tolerate a certain degree of messiness in allowing the child to feed himself, she will avoid associating continual nagging and unpleasantness with the child's early efforts to feed himself. If food can be presented to him in a way that he can eat it easily and if when he begins to play with his food or throw food, the food is removed from him or him from the table without much fuss, he will gradually learn to eat more skillfully and the spills and messing will become much less. After he has learned to enjoy food and accept it as one of the good things in life, then one can gradually begin to work on the methods of eating. But to fuss too much about manners prematurely may discourage the child and make him dislike the whole process of eating or to become passively dependent on being fed by adults.

Controversy as to whether the child at this stage eats with the family or is fed separately is a perennial one and some families feel very strongly about this. Whether the child comes to the family table or not probably depends upon the adults' ability to tolerate a certain amount of messiness, and adults' tolerance in this respect varies greatly. There is no reason why the child needs to eat at the family table if father and mother are both upset by his lack of skill in eating. It would be much better to feed him separately or with the other young children and let father and mother have their meal later in relative peace. He can join the family table later after his skill has improved.

Sometimes a nursery school will help decidedly in developing better eating habits. Visiting with other families, often someone not directly related to the child, may be more successful in helping him learn to eat new foods than will his own mother. This may be particularly true if the mother is tense and overanxious and finds it impossible not to communicate this anxiety to the young child. Gradually the child comes to accept the way his family eats, the kinds of food they have, and the way mother prepares food as the one and only way that these foods are acceptable, unless he does have experience with friends or relatives or in a nursery school or in some other situation outside his own home.

The School Age

The school age child begins to have more opportunities for being influenced by other people in the community and he may have quite a bit of difficulty accepting the way foods are prepared elsewhere. "Mother doesn't make meat loaf like that" may be his comment when he visits a neighbor family. But gradually as his contact with other families widens he begins to be influenced by these friends and outsiders and finds that food can taste good even when it is prepared differently from the way mother prepares it.

One of the biggest problems with the school age child is finding a time when he is willing to sit down and really eat a meal. Often these children are so busy with school or with play activities or with their friends that it is extremely difficult to get them to take time to eat. The child is likely to satisfy his hunger quickly and then want to dash off to something else. Actually his hunger is not completely satisfied and he will be back for a between-meal snack later.

Snacking between meals while watching movies or television or just at various times when the child seems to feel the need for food has become a very important factor in the development of food habits during these school years. Some parents take advantage of this and plan snacks that can be a valuable part of the child's total intake. In other cases the child simply goes to the regrigerator or the cupboard and helps himself to anything that happens to appeal to him.

Of course, in some socio-economic groups--for example, our migrant workers--or in the groups where both parents are out of the home working throughout most of the day, meals are not prepared or served on any regular basis and children simply forage for their food as they can. It is quite surprising to many of our university students who work on playgrounds or in settlement houses during the summer to find that many of their children do not bother to go home for meals because no meals would be available for them. When they do go home, the child is usually expected to forage for his food wherever he can find it.

Even in our middle-class homes it is becoming increasingly difficult to get the whole family together for any meal of the day. Family schedules are so different that the mother finds herself feeding some member of the family at odd hours and it is rare for the whole family to sit down together for a meal. This further increases the tendency for the between-meal snacking and perhaps encourages a trend which is becoming more and more apparent in our school age children--the tendency to overeat and underexercise which is resulting in obesity or at least an undue amount of chubbiness in many children and adults. In some cases the snacks do not cut down on the child's consumption of food at mealtime and simply result in an excess of food and in overeating. The small eater probably continues to be the small eater throughout this period of childhood and the child who likes to eat and eats frequently will continue to do so.

The Adolescent

As the child grows older the community customs, eating habits of friends, and others become more influential. The child has the opportunity to go to camp or to visit in the homes of friends. Perhaps some of the things which she learns in school may influence the adolescent girl to either include or exclude certain foods from her diet. The school is potentially a very important source of nutrition education if the teacher is informed and if the child has the opportunity to observe experiments in feeding animals, or has other experiences which are convincing in nature. The adolescent girl often becomes concerned about her weight and may want to cut down on foods at mealtime in order to be able to indulge socially in foods with the gang or in other group situations.

The influence of friends and associates can often be good as well as bad. I was talking recently with a mother of a teenage boy. This boy has never cared for vegetables and his mother has been unable to get him to eat vegetables with the family. He has recently been going steady with a girl he met at school and she was invited home to have dinner with his family. She helped to serve the food for the family dinner and put a sizable serving of vegetable on her boyfriend's plate. When she set it down in front of him he said "What is that?" pointing to the vegetable, and she said "It's beans, and you're going to eat them" and what's more he did, without a murmur. His mother watched with quiet amazement and amusement at the same time.

Boys this age are often interested in learning to cook and much can be accomplished in the home or school in helping them learn to prepare meals and to learn about the values of different foods. They normally have large appetites and are interested in eating large quantities of food both at mealtime and in between meals. If coupled with ample exercise, the child will not become overweight from what appears to be considerable overeating.

Good food habits well established in the early years will usually persist and the family that enjoys food together and has had many happy experiences with food will

find that these experiences can continue throughout the child's adolescence and become one of the subjects about which the family can agree and can become a focal point for enjoyment of each other when there are so many sources of stress and strain, otherwise.

In conclusion, then, the family has a period of approximately 14-15 years or longer in which to influence the child's food habits. These habits are built on the kinds of experiences which parents and children have together in day-to-day living and become extremely well established and difficult to change later. The child learns to like food that he is accustomed to, prepared in the way he is accustomed to having it prepared, and the personality of the mother seems to be more influential in whether a feeding problem develops than the type of feeding during infancy or the kind of scheduling or the method of weaning which the mother uses.

The community becomes a much more important influence during the school years, but even during this period the family practices are most important and tend to be more important than the community influences throughout most of the school age period.

The hectic schedule and varied interests of many of our family groups tend to make it difficult for the family to eat satisfying meals together, and much more emphasis is probably placed on snacks and quick meals than upon eating together at the family table. This is unfortunate for many reasons because the family meal table did form a very important part of the child's total life as well as developing good eating habits. With new patterns of informal living, commuting, television, and other influences, we find the family meal becoming relegated to weekends and holidays if it exists at all.

Modern technology is making prepared foods more easily available to families at all levels of society and in all social groups and perhaps bringing about a greater standardization of likes and dislikes in foods than we have had in the past. The bewildering array of choices, however, makes nutrition education both of the homemaker and of the child in school even more important than it was in the past. Family members have tremendous choices to make in the selection of food and unless they have some sound basis of knowledge to make these choices, they are more likely to be made on the basis of the influence of advertising and on the basis of superficial likes and dislikes which may not be advantageous to the family in the long run.

In any event, the family still remains the most important factor in influencing the child's food habits.

OPPORTUNITIES FOR FURTHERING NUTRITION EDUCATION IN HEALTH AGENCIES

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The importance of nutrition to health at all stages of life is a well-recognized fact. It is generally agreed among health agency personnel that improvement in the public's nutrition depends upon the daily decisions of individuals regarding their own eating habits as well as those of the family and of the community. To make wise decisions, education is essential - education not only in nutrition facts but also for the intelligent and consistent application of facts to daily living.

Health agencies recognize that sound nutrition education is possible in a variety of ways. It is a component part of the many health programs conducted by public and voluntary agencies and is particularly prominent in the areas dealing with maternal and child health, chronic diseases, and general community health activities. Likewise there is great interest in encouraging, supporting, and supplementing the sound nutrition education programs of all other groups. This is expressed by the availability of professional consultation and the provision of literature and audio visual aids; in utilization of agency resources for learning experiences such as field trips and by joint planning and participation in nutrition education programs. Perhaps the most important current nutrition education concern within health agencies is the need for all interested groups to coordinate their efforts for more effective programs.

Nutrition education resources of health agencies are numerous. A variety of professional personnel are employed who can and do contribute to nutrition education. Services of these persons are available in many different ways. Assistance may be as informal as answering technical questions, helping to plan individual nutrition education projects, providing literature and making follow-up visits in the home, or it may be as involved as coordinating the community health resources for effective nutrition education. Many health departments employ nutritionists but failure to do so does not preclude assistance in nutrition education from physicians, nurses, and other members of the public health team.

Some pertinent questions often directed to health agency physicians are: How should the problem of the obese school age child be managed? Is there any danger from drastic weight reduction in growing boys who are qualifying for lower wrestling weight classification? Or, what are the health implications of bizarre eating habits of teenage girls?

The between-meal eating habits of children are of special interest to dentists and dental hygienists. Choice of snack foods offered for sale in the school and refreshments at 4 H Club and other youth group meetings are some nutrition education aspects of a dental caries control program.

Nurses, probably the best known of health agency employees, include nutrition education and diet therapy in their health counseling and service. Teachers, leaders of youth groups, agricultural extension workers, and others often feel that certain children or families need intensive individual instruction in normal nutrition or require special help because of diet modifications.

In these instances, public health nurses can be of inestimable value for follow-up visits in the home. Nurses are the health workers who come into the most intimate contact with community and family. They help to identify many of the existing nutrition problems and to secure public health resources.

Nutrition education is one of the interests of health educators. They are alert not only to the health areas and material resources of agencies but are particularly well equipped to identify professional personnel within the health agency who would be the key resource in any given nutrition education project. They can also give assistance in problems involving community organization and in preparation of educational material.

Public health engineers and sanitarians give consultation on safe food practices for school lunch or other group feeding activities. Upon request, they participate in many in-service education programs.

Statisticians are able to provide useful information on community population, vital statistics, reportable diseases, and other data on existing health problems. They are also an excellent resource in setting up nutrition studies and research.

The persons who have nutrition education as their special area of responsibility are the nutritionists. They organize, direct, and coordinate the nutrition services of the health agency and give consultation and service in the nutrition component of the agency's program. Also, they participate in nutrition programs with all other agencies and community groups. Because of their working relationship with the other public health disciplines, they are key resource persons for consultation on general nutrition education programs and specific nutrition problems.

Nutritionists consult with school personnel in planning and developing school nutrition programs based on local needs. This may involve assistance with surveys of eating habits, conferences with parents, attending curriculum meetings, conducting in-service education for teachers, and suggesting classroom materials. They also work with school personnel toward improving the school lunch program and interpreting it as an educational experience.

Some general types of assistance that nutritionists provide to youth groups in the community include help in leader training conferences, development of guides, conducting group discussions, giving help and training in camp feeding, or in developing individual nutrition projects.

Health agencies offer other services which provide contact with children and families. Nutrition education is a part of well child conferences, orthopedic clinics, and public health nurses' home visits. It is also included in classes conducted for pregnant mothers and for patients with various health problems such as diabetes or cardiovascular disease. Other structured opportunities for reaching people include public health agency publications and extensive audio visual aids. Through these many services, large segments of the population receive valuable nutrition information.

The relationships that public health agencies maintain with other community agencies

have further implications for nutrition education. In addition to their inspection and licensing functions, health departments conduct in-service education programs for hospital personnel and jointly participate in health research, clinics, and community health activities.

With schools, departments of education, and colleges and universities health agencies maintain two-way consultation in nutrition and participate together in in-service education programs. Also, the health agencies maintain liaison and supplement each other in their community work, functioning together in a flexible pattern with other groups in councils, committees, and projects in which personnel, funds, and other resources are combined for a common goal. Through these channels of communication it is possible to bring nutrition problems into focus and to work together in solving them.

For example, in many States summer workshops of 3 days to 3 weeks duration are conducted jointly by universities, state departments of health and education, and voluntary health agencies. The faculty is composed of professional personnel from the sponsoring groups. Funds are made available by the official or voluntary health agencies to pay the costs of the workshop and to provide scholarships for participants. The school health workshops are conducted for school administrators, curriculum directors, teachers, health directors, nurses, physicians, school lunch managers and cooks.

In lectures, discussions, and work sessions, practical nutrition help is given and useful "take home" projects are developed. Outcomes of these workshops are continued nutrition consultation to some schools and teachers, new curriculum development or revision, improved teaching guides, bibliographies for nutrition education, food habit surveys, and many local nutrition programs.

Inservice education opportunities should be expanded to reach more teachers and additional effort must be made for increased participation in the preservice health education of school personnel. There is a need to work with other groups to explore ways to improve nutrition education, possibly by conducting research and providing educational opportunities in the social and emotional aspects of nutrition.

In summary, the opportunities for furthering nutrition education are limitless. It is difficult to attempt to describe health agencies' nutrition interests at any point in time. The programs that develop reflect the needs and interests of the community. When needs change, program emphasis changes. As groups request help and consultation, services are expanded and new programs are started. Through coordinated, interagency and community-wide research it is possible to study the precise nutrition needs and identify the available resources. Likewise, joint planning and program execution will accomplish results that cannot materialize by individual or fragmented effort.

OPPORTUNITIES FOR FURTHERING NUTRITION EDUCATION IN SCHOOLS

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Awareness of the Problem to Improve Nutrition Education

There is ample evidence available from clinical research, surveys, attitudinal inventories, health status records, school lunch programs, the literature pertaining to growth and development, consumer practices, and socio-economic studies to support our interest in and concern for improving nutrition education among children of school age.

The professional journals in the fields of nutrition, medicine, health education, pharmacy, dentistry, and the social sciences, along with popular publications point up the need to improve nutrition practices.

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Add to this literature, the books, films and other audio-visual materials, the several periodic newsletters on the subject, the admonitions of our mass media - and you find overwhelming testimony that a problem exists.

Conferences such as this one involving persons from several disciplines as well as other meetings of professional, governmental, and commercial groups on national, regional, and State levels reaffirm our conviction and dedication to finding and applying solutions for the improvement of nutritional practices.

Numbered among the recommendations of the 1960 White House Conference on Children and Youth are several relating to the need for nutrition education and continued research.

I would venture to say that perhaps in no other aspect of health is there a greater cognizance of the problem--that is, if any correlation can be made between the degree of awareness that appears to exist and the amount of emphasis on the problem that is reflected through the numerous media of communication cited earlier.

Evidence of the Need to Strengthen Nutrition Education

There is no need to reiterate the various aspects of the problems related to nutritional practices. The participants in this conference over the past two days have reviewed the subject in detail. Some new approaches and evidence have been offered for your consideration. You are convinced of certain basic facts related to teenage eating habits, the development of good nutrition practices in the early formative years, the nature of learning process, the determinants of behavior as they affect nutrition, the role of the home and community, the effect of nutrition on growth and development, the complexity of the obesity problem, the needs of specific age groups, the role of the School Lunch and Milk Program, and so on.

Implications for Nutrition Education in Schools

Again, it would be presumptuous for me to cite for this audience specific approaches to strengthening nutrition education in the classroom. The literature is abundant with accounts of the suggested use of methods and materials, and there are also examples of descriptive projects that have been actually tried. These range from food tasting parties and animal feeding experiments to food selection and preparation and surveys by students of their own food eating habits.

There is no dearth of printed nutrition education material published for the teacher and students. Again, excellent pamphlets, posters and other graphic materials, mobiles and food models and books on the subject are available if the teacher knows where and how to locate them, if she has time in her teaching day to use them, and if she is convinced of the value of nutrition education. I shall elaborate on this point later.

The methods for making nutrition education effective likewise have received their share of emphasis. We know that nutrition education should be continuous and sequential in content, progressing in degree of difficulty throughout the grades K-12. We would all agree that teachers need to have adequate fundamental nutrition information. Basic research verifies the education principle that learning proceeds best when pupils are motivated, when they see the relationship of the learning experience to their goals and values, and when they participate in the learning experience.

At this point it would be well to stress the need to utilize the increasing number of studies related especially to the teenage group and their behavior.

Examples of these are: (1) Eli Ginzberg's "Values and Ideals of American Youth," 1961, which is a compilation of distinguished papers and addresses from the Golden Anniversary White House Conference on Children and Youth; (2) The November, 1961 issue of "The Annals" of the American Academy of Political and Social Science, devoted entirely to "Teen-Age Culture," with an important section devoted to the variations among various teenage ethnic groups; (3) the Office of Education Cooperative Research report titled "Social Climates in High Schools" by James Coleman. This monograph is a summary report of the 1961 publication "The Adolescent Society."

Many implications for nutrition education are corroborated in these studies which document the increasing impact of the adolescent culture. For example, Coleman found in the adolescent mind "to rate personally is to have a good personality, athletic ability and good looks." In a question asked of the boys, "If you could be any of these you wanted, which would you want

to be?" Boys wanted to be first a nationally famous athlete, an atomic scientist ranked third after jet pilot and the missionary was a poor last choice. Girls wanted to be a model first, nurse second, schoolteacher third, and actress or artist last. There are many other references worth exploring that might be cited here.

Improving Nutrition Education Programs

In order to improve nutrition education programs, we must commit ourselves to the improvement of total school and college health education programs. The following suggestions are offered for your consideration:

1. Good nutrition practices should be viewed within the context of good health as a way of life--it is difficult to isolate nutrition from other factors such as sleep and activity, personal appearance and vitality, dental and medical check-ups, a good mental outlook, posture, growth and maturation, the menstrual cycle, the ability to bear normal and healthy children, the responsibilities of feeding a family in early marriages, etc. Good health is a matter of choice. The task of teachers is to provide students with scientific information in all areas of health so that they can make wise and intelligent choices and develop self direction.

Then how can school and college programs of teacher education be improved? We are aware that the school curriculum has many demands to meet all the modern-day requirements. With the emphasis on science, what can be more fundamental than sound approach to health? We hear the plea to emphasize "the life sciences" yet health education is not ordinarily included in this category. What can be more of a "life science" than that one that deals with the human organism itself?

2. Nutrition specialists should be aware of the scope, extent, and quality of health education programs in schools and colleges, especially those preparing teachers, in their area. How much time is provided in the curriculum for health education? Is the person assigned to teach in this area professionally qualified in health education? Does the course have equal consideration with other academic subjects in relation to scheduling, time allotment, environment for instruction, availability of materials, and other important factors? If not, why not? Do all school administrators and persons responsible for teacher preparation accept the importance of health education as an essential part of the program?

The cause of nutrition education will not be advanced if the profession merely registers periodic protest that inadequate time is being allotted for emphasis on nutrition in schools and colleges. If a course in health education designed for the preparation of all teachers has a total class meeting time of 30 hours, including time necessary for evaluation and organizational factors, how much of it can be allotted to the study of nutrition?

You may protest if I say 2 to 3 hours by any generous allocation. But remember that in these 30 hours are other important health concepts such as mental health, home and family life, use of narcotics and drugs, consumer education, safety education, communicable and chronic disease control, community and world health activities, the emerging new health problems such as biological effects of radiation, water and air pollution, life in the space age. Add to these the need to develop among prospective teachers an understanding and appreciation of and skills pertaining to other aspects of the total health program such as health appraisal procedures, the school environment, coordination of efforts with other specialized personnel, adaptations for those with special health problems--and so on. With this overview of the problem you may find that 2 to 3 hours is a pretty generous allotment of time for nutrition.

3. The many professional groups represented here might consider the adoption of resolutions emphasizing the importance of adequate school and college health education for all students and teachers, such as those passed by the American Medical Association, the American Dental Association, the School Health Section of the American Public Health Association, and other groups. These need to be directed to the appropriate individuals and groups with responsibilities for curriculum development and program administration.

4. Where resources can be made available scholarships and grants-in-aid should be promoted that will encourage well-qualified students to choose health education as a career and to provide opportunities for teachers to engage in health education summer workshops and other inservice activities such as conferences and institutes, throughout the year. We cannot estimate the impact that the experience of

attending such a conference as this one might have on teachers.

With all of the scholarships available to young people in the sciences, languages, and other curriculum areas none exist to attract young people into the field of health education. The "Health Careers" projects and governmental and private grants specify "health professions," but these are viewed as the professions that are focused on the restoration and rehabilitation of the ill rather than the preservation and conservation of health.

You can, therefore, investigate the various scholarship and other aid programs, such as those provided under the National Defense Education Act, to be assured that health education is included among the fields of specialization to which these apply.

5. The development of new materials for nutrition education should continue to be based on the needs and interest of students and teachers. Teachers who use these materials in school and college classrooms can be helpful in giving direction to your excellent efforts.

For example, there is need for a film or two focused on nutrition within the framework of a person's total health and directed toward the teenage group. The more current films produced in the area of nutrition are designed for adult audiences with particular emphasis on obesity--"Losing to Win," "The Ordeal of Thomas Moon," "Weight Reduction Through Diet," "The Owl and Fred Jones," and "Facts and Figures."

The film produced by the National Dairy Council some eight years ago, "It's All in Knowing How," was well received by high school students and those in teacher preparation programs. Another film or two that utilizes the research nutrition findings we have available today and relates them to the values and goals of teenagers is needed. "The Color of Health" produced by the American Baker's Association in cooperation with the American Association for Health, Physical Education, and Recreation for junior high school students is an example of portraying good nutrition practices within the context of total health needs.

An example of another kind of publication for which there is a need to combat increasing fads and unsound practices is one devoted to "Nutrition and the Athlete." The research articles are extensive on this subject, but unfortunately the coach, team physician, parent, and other responsible persons are not likely to seek these out.

A Joint Committee of the Health Education Division and the Division of Men's Athletics of the AAHPER have prepared a detailed outline for such a publication with a comprehensive research bibliography. One of the country's outstanding nutrition authorities who has contributed widely to the research in this field has served as a consultant to the development of this material. The project is at a standstill at this moment for the lack of financial support to underwrite the publication and to distribute it widely to the groups concerned. Evidence clearly indicates that the optimal diet for an athlete is not different in any major respect from that which would be recommended to any normal person. It has been said that "the coach has a leverage which no one else has in changing the eating habits of teenage boys--that is their desire to excel in sports." This influence can be either a positive or an unsound one. The proposed publication would hope to provide coach and parents with scientific information on which to make sound judgments.

6. Organizations and leaders in the field of nutrition education need to constantly examine the focus of their efforts and energy.

Probably no other area of health depends as much on parental cooperation. Many eating habits and attitudes are transmitted by parents.

Young children especially have little control over what constitutes their nutritional intake. Examples of adults mean more to the child and adolescent than the words of advice they are prone to give.

Even though teenagers are depicted as resisting parental pressure which is exerted by telling them what to do, studies reported indicate that "far from rejecting adult values, teenagers pay them the supreme compliment of imitating or borrowing them, and adapting them to their own needs." We have evidence to corroborate this in the surveys of smoking among teenagers, drinking habits and the worship of material things as part of their value system.

In order to favorably influence the nutrition habits of youth, the diet of his entire family must be examined. This is a long-term program. The solution is not simple because the complexity of the problem rests in the changing character of family life.

Recently an article in a local paper reported the findings of a conference of senior and junior high school students on the reasons for school vandalism. One of the reasons the students cited was that some came to school "ornery" because they couldn't get anything to eat at home.

Thus, continuing to reach the parents more effectively is another consideration for this group.

In summary, let me reiterate that the nutrition education groups are constantly producing excellent materials for use with students and prospective teachers. What may be needed is an appraisal of the effectiveness of your time, money and energy as you view the progress in retrospect?

Do any of the suggestions presented here have merit--especially those related to the proper utilization of these materials, the need to promote nutrition programs within the context of total school and college health programs, the urgency of supporting these programs as an essential part of the curriculum and the need to consider specific materials in demand to meet some of the existing gaps?

OPPORTUNITIES FOR FURTHERING NUTRITION THROUGH THE EXTENSION SERVICE

Evelyn B. Spindler
Extension Nutritionist
Federal Extension Service
Washington 25, D.C.

Opportunities for furthering nutrition through the Extension Service are almost unlimited.

State Extension Services make a real effort to reach out to many audiences with a nutrition program. Yet, there is a real concern that many persons are not now receiving this information. We are confronted with the problem of how many people can be reached with what depth of nutrition information.

Let's look at the audience that we now reach. Almost every State has home demonstration and 4-H clubs with a membership of approximately $1\frac{1}{2}$ million adults and about the same number of youth. Most States are giving some nutrition information to these two groups. Both the amount and the depth of this teaching varies widely. Since programs are planned with the people in each county in 50 States and Puerto Rico, there are many similarities; there are also differences. One of our best opportunities for strengthening nutrition education lies in assisting program planning groups to identify nutrition problems and to concentrate their effort on the areas of major need.

Where this is well done, there is more nutrition teaching and much more depth in the programs of these adult and youth groups.

In addition to programs for organized groups, the Extension Services in most States have many channels for reaching various mass media audiences--radio, TV, newspapers--to name a few. There are opportunities to increase the number of these contacts as well as to improve the way they are used. For instance, a series of related articles on nutrition using one or all mass media at about the same time would be one way of reaching out to a large audience. In some States where this has been done, results have proved more successful than occasional articles or programs on the air. There are many opportunities for good, well-planned, and well-presented mass media programs.

One important opportunity for furthering nutrition education is through a series of meetings carefully designed for a special audience. Examples are:

1. Weight Control Series.--Actually, although the loss of weight is desirable, the most important outcome is that members of the groups improve their diets and develop good food habits not only for themselves but for their families. This is an excellent method to achieve greater depth in nutrition teaching.
2. Teenage Nutrition.--Some of our most successful programs have been

through a series of meetings for teenagers in which nutrition teaching, designed to improve the attitudes and practices of teenagers, has been combined with social activity normal to this age group.

3. Young Homemakers.--The person who most needs the information on nutrition for a young family, namely the young homemaker, does not always know where to go for authentic information. Several States hold a series of meetings at a convenient time and place for this audience with much success. The number of programs designed especially for them is increasing.
4. Working Homemakers.--These women may not have time to attend meetings so especially designed, short information leaflets are made available to them at such places as laundromats or places where they are employed.
5. Older Folks.--Many older folks living on small incomes and eating inadequate meals can be reached through organizations such as the golden age clubs. These persons welcome the special attention some of our home demonstration agents and specialists have given them at their meetings.
6. Unemployed Persons receiving donated foods.--Many of these homemakers are puzzled about the use of dried eggs, dry milk, and some other unfamiliar foods. They may be taught not only how to use them, but how they contribute to a well-balanced diet. Extension agents and trained volunteer leaders have given demonstrations and distributed thousands of leaflets to this audience.

In almost every State there are opportunities galore to further the nutrition education of audiences with special needs and interests through the Extension program.

There is another great opportunity in keeping our colleagues informed about the latest findings in nutrition research. Our county agricultural agents, agricultural specialists, supervisors, and other professional workers in Extension have many opportunities to further nutrition education and appreciate being kept up to date in nutrition.

Several counties have had a series of nutrition meetings open to professional workers who work in education but who are not always trained in nutrition, such as school teachers, nurses, school lunch cooks. Others have had special training for managers or nursing homes. These sessions are often sponsored by nutrition committees which represent Extension Service, public health, school lunch, education, etc.

Through our programs in consumer education, extension workers give information about the nutrients obtained for the food dollar. This information is given by mass media as well as meetings and so reaches a wide audience.

Programs in home food production and preservation have been basic to the Extension Service for many years. Many of the special programs such as Farm and Home Development emphasize the production of food where it is economically feasible.

Good publications, exhibits, and posters that are designed to interest persons in nutrition can be placed where people usually wait such as doctors' and dentists' offices, bus stations, laundromats, as well as in county and State fairs to spread nutrition information.

There is no shortage of opportunities for the Extension Service in furthering nutrition education.

FOOD INDUSTRY OPPORTUNITIES FOR FURTHERING NUTRITION EDUCATION

Horace L. Sipple
Executive Secretary
The Nutrition Foundation
New York, N. Y.

Increased public interest in knowing more about the ways in which food habits affect health and well-being has created a very favorable climate for the extension of nutrition education. Many agencies, professional groups, commercial and non-commercial organizations concerned with foods, nutrition and public health have responded well to the opportunity presented and have accepted a large measure of responsibility for reaching the public with sound nutrition information.

The food industry is one of the elements that has been active in nutrition education for many years. At a meeting of The Nutrition Foundation several years ago Dr. R. R. Williams, formerly with the Williams-Waterman Fund, made the interesting comment that he thought food advertising had done more to educate the housewife in nutrition than had all the schools and colleges combined.

Both the opportunity for furthering nutrition education and the need for wider and better public knowledge in this area are increasing. I believe that one of our basic problems today is the finding of ways through which our efforts can be increased and sustained so as to help meet adequately the continuing need for nutrition education. I suggest that the situation calls for the provision of more information and of doing so through activities that form a permanent part of the total public information program aimed at improving our food habits.

The food industry is continuing to carry out a number of professional and public educational activities. Industry support of work in this field is growing.

Many individual food companies carry on very effective programs through information materials distributed to schools, to physicians, dentists and other professional people dealing with the public on matters related to nutrition, and to the public at large through channels such as newspapers, magazines, radio, TV, women's clubs, and material distributed directly to consumers. To cite a single example, one company conducted an extensive project for some 12 years with children at the grade school level. During this time more than 25 million students used the nutrition education materials made available under the project.

A number of the trade associations within the food industry conduct extensive educational programs through the use of advertising and promotional materials. These programs usually reflect broader objectives since they are not determined by individual company goals. Excellent teaching materials are produced by many of the associations of the industry.

Organized 20 years ago with a very broad base of support provided by companies within the food and related industries, The Nutrition Foundation has had as its major responsibilities (1) support of basic nutrition research through grants-in-aid to universities and medical schools, and (2) development and maintenance of a program designed to reach the public with sound nutrition information that will serve as a guide to good nutrition in daily life.

Carried on heretofore primarily through professional activities, such as the publication of the monthly technical review journal "Nutrition Reviews," the Foundation's educational work is now being augmented by the dissemination of information to the public through an increasing number of booklets, pamphlets, and magazine and newspaper articles prepared by or based on material supplied by the Foundation.

The best opportunities for the food industry to further nutrition education appear to me to lie in the improvement and extension of the good work that has been initiated by industry in the various ways just mentioned.

Food industry leaders concerned with the problem of nutrition education feel that the most effective educational method available for direct use by individual companies is advertising through recognized media. Advertising can stimulate interest and offer information. Properly prepared copy can convey sound nutrition information to virtually all segments of a reading or listening population.

There is a danger involved in the use of advertising, however, just as there is in the use of any powerful tool, drug, or measure. The danger that must be recognized and carefully guarded against is the tendency, which has not been resisted by some companies, to overemphasize the favorable characteristics of their own product, thereby creating the impression that this product is superior to others of its type.

Sound advertising and point-of-sale promotion of food products featuring their good commonsense nutritional attributes and avoiding the "more than," "sell more than," "better than," "no other is as good as" type of copy offers a channel through which the food industry can reach millions of consumers every day in a way that would mean much more and be of more real value to the public.

Another method which individual companies can employ to good advantage, in addition to direct advertising, is the development of informational material--booklets, pamphlets, films--made available for distribution to groups, particularly to schools. Several companies now distribute very good material, but the field is far from saturated.

The danger of misuse is the same here as in the case of advertising. Product bias must be avoided if the material is to be of any value and acceptable as sound nutrition information.

Industry has an excellent opportunity for furthering nutrition education through its trade organizations. Trade associations can present nutrition information for entire food groups, utilizing both direct advertising and promotional material. Here the approach can be more objective. The question of individual company interest is eliminated. An inherent difficulty that must be overcome is the natural tendency of each association to overemphasize the properties and virtues of its own commodity or commodity group. Most association materials now being distributed are very good, and in general are relatively free from noticeable or objectionable commodity bias. Excellent teaching materials are distributed by the food industry's major trade associations. More good material is needed and would certainly be highly acceptable.

Furthering nutrition education through objective activities supported by the food and closely related industries as a whole represents the best working basis since a program with such broad sponsorship is evidently in the public interest and as such can achieve unreserved acceptance. It is of interest to note that this concept occurred to leaders in the food industry some 20 years ago. They recognized the opportunity and accepted the responsibility for action by forming The Nutrition Foundation.

A program aimed at reaching the public effectively with sound nutrition information has been one of the two major responsibilities of The Nutrition Foundation from the time of its organization in December 1941. The Foundation's work in this area is now being augmented and will continue to receive increasing emphasis. This activity will not decrease or affect adversely the program of basic research support. The objectivity of the Foundation's program, with its freedom from commodity interests or bias, has made its materials quite acceptable to both professional groups and the general public.

In summary, a good beginning toward better dissemination of nutrition information has been made by industry through the various channels just mentioned. A major opportunity exists for industry to greatly increase this dissemination by augmenting and extending these activities, particularly those representing coordinated programs given industry support on a broad basis.

The extra educational effort required would not only aid greatly in combatting food faddism and nutrition quackery--the most prevalent form of quackery in this country--by replacing fantasy with fact but would also help meet the need for a practical guide to good nutrition in everyday life.

OPPORTUNITIES FOR FURTHERING NUTRITION EDUCATION IN THE COMMUNITY

B. Lucile Bridges, Executive Director
New England Dairy and Food Council
Boston, Mass.

Many opportunities exist for furthering nutrition education--but some of the best ones are created. Just as we are stimulated by joint thinking at this conference in Washington, teachers or community leaders who are brought together under favorable circumstances get inspiration and ideas on how to put across nutrition information to their various publics.

We use this theory in the nutrition program conducted by our Dairy Council in the Boston Area. Periodically, we arrange meetings of special-interest groups and present speakers, or arrange opportunities for an exchange of experiences. Two workshop-type meetings will serve as samples: (1) Workshop on Nutrition Education for Elementary School Teachers and (2) Dental Health Workshop. Both are ongoing projects.

Nutrition Education Workshop

Our Nutrition Education Workshop got started with a small planning committee who developed outline, format, etc. The completed plans for the meetings were

then presented to the Department of Education, Department of Health, School Lunch, and Extension Service--whose cooperation we formally requested.

We sent out joint invitations to selected teachers, nurses, or supervisors in a group of towns in Eastern Massachusetts. We selected towns where there was interest in nutrition in the schools, but we selected other towns where interest needed to be aroused. We consulted with supervisors and principals regarding whom to invite and tried to include a team from each school system--several teachers and a school nurse or a principal--a group who could work together to activate a program. Some of these groups, we knew, had already conducted surveys or carried out interesting classroom units.

This workshop consisted of two sessions--one in the fall and the second in the spring. The first session highlighted guidelines and some appropriate approaches for teachers with a limited background in nutrition. New groups were added for the second meeting.

A large part of the success of our Nutrition Education Workshop goes to Dr. Mary M. Hill, who acted as a competent guest-consultant at both meetings. She had an opportunity to evaluate some of the carry-over from the first session, as teachers from selected communities reported on how they had carried out nutrition education projects in their schools.

These teachers took us into their classrooms with exciting dramatizations, puppets, tape recordings, and pupil artwork. Their enthusiasm was contagious, and their stories often amusing. For example, one teacher told of the experience of her kindergarten class with the pumpkin. It started with a field trip to a supermarket and went on to making pumpkin pies and the big moment when the children took them proudly home. And it did not end there--the pupils planted some of the seeds and learned that good soil, water, and light are needed to make plants grow.

What has happened since? Are these ongoing programs? The work of the Arlington kindergarten teachers is an outstanding example. The teachers and supervisors who attended the Workshop saw to it, last fall, that the subject of their inservice training was nutrition. For one of their weekly sessions, they came to the Dairy Council office for a look at visual aids and more suggestions for teaching their pupils good food habits. Each teacher developed her own classroom activities, and at a meeting coming up soon, they will exchange ideas which we hope can be passed along at our next workshop session.

Another example of followup is what took place in the Malden schools. Eight teachers and supervisors attended the second workshop meeting, and nutrition was the subject they chose for a half-day session for 90 of their intermediate teachers. Our staff members and other nutritionists provided the information and ideas for effective educational techniques.

Dental Health Workshop

Another workshop-type meeting was arranged in cooperation with the Massachusetts Dental Society, Department of Education, and the Department of Health. The same basic principles were advanced. We had double the attendance we anticipated, and some of the same people came to this workshop and the Nutrition Education Workshop. This was a late fall meeting in preparation for Dental Health Week in February. A letter from one of the school principals who attended expressed enthusiasm and the plans for his school:

> "The workshop was a very pleasant and profitable experience for me and I wish to extend my thanks for having been invited. Perhaps I can best thank you by saying that we hope to put the suggestions of the workshop speakers into effect in the following ways:
>
> An assembly for all pupils
>
> Poster contests among the different grades
>
> Conferences among the teachers
>
> "We will try to get your message across to our pupils in the interest of better dental health."

Making Nutrition Education Projects Effective

There are a number of factors which help make a nutrition-education project--such as our workshop--effective. I would include among them--

1. Enlisting the cooperation of several health and nutrition agencies
2. Small planning groups to initiate the project
3. Diverse activities--that is, speakers, open exchange of ideas, brainstorming sessions

4. Sound background nutrition information
5. Effective teaching aids
6. Approaches and techniques for helping children and adults develop good food habits
7. Availability of consultant nutrition-education services
8. Followup to further interest--and to develop scope of the project

Opportunities for furthering nutrition education can be found in all areas of the community, however--as well as in the schools. Our goal of adequate nutrition for all requires on-going programs for all ages. Progress can be made when we work together reaching many different groups at their own interest level, and in so doing, stimulate total community participation.

IMPLICATIONS OF THE CONFERENCE--A LOOK AHEAD

E. Neige Todhunter, Ph.D., Dean, School of Home Economics
University of Alabama
University, Ala.

It is not easy to draw significant implications from a conference like this when one is still in the thick of it. However, I believe if Shakespeare's Hamlet had been here at this conference, he would immediately have drawn one implication and would have said again his well-known words, "We know what we are but we know not what we may be."

This profession of ours--nutrition--is one of the oldest of all professions and one of the oldest concerns of man. In the Bible, for instance, you will read in Isaiah, chapter 55, verse 2, these words, "Harken diligently to me and eat ye that which is good." And Paul to the Corinthians, "Eat that which is set before you, asking no question for conscience sake."

These words were written back in Biblical times and they have been available to man ever since, but here you can see proof, if it is needed, of what Dr. Fleming has been saying to us. Telling is not teaching. Learning is something different from being told, and so the words of Isaiah and of Paul, telling people, have not been effective.

It is not my job to summarize this wonderful conference. It is the fourth in a series and I think this can be the greatest of all the conferences that have been held. This can be the one that brings all these discussions about nutrition to a natural, logical development from the preceding ones. This can be the conference where we have the fulfillment of our dreams.

However, before going on to the implications and the dreams, I cannot resist the temptation to emphasize what I think we are all going to carry away. We are all going to carry away some gems for our mental jewelry. You will have your own gems. These are some of the gems I am carrying away:

"Durable quality that good nutrition can help impart"--you will remember these opening words from Dr. Stiebeling. Then other gems: "Anticipatory guidance," "Life is a continuum," "Difference between small appetite and poor appetite," "What is the age of the child," "Imbalance between opportunity for choices and training to make the choices," "Watchfulness and encouragement," "Accept overweight children for what they are, not what we want them to be," and the very important gem--"Knowledge of nutrition is favorably related to good practices."

If you get discouraged when you get back home, remember that last gem, verified by the report of research of the Iowa group presented by Maxine Armstrong.

Other gems: "Be committed," "Teachers who care," "People watchers," "No single approach," "Adapt to needs."

I could go on, but I have strung a long enough necklace for myself and you can string your own gems for your mental jewelry. We do have these gems to carry away. They are very significant to us.

We also, all of us I think, will carry away a new impression every time we look at a vending machine. Now we will not see a vending machine but the personification of the primitive mother.

We also will carry away something else. We will carry away problems too. They were brought out at the discussions where you all had an opportunity to be involved.

We still face the problems of how to motivate; how to involve others; how to get nutrition teaching into the schools; the need for cooperative effort; how to combat food fads and quackery; how to get more depth in our own knowledge and understanding; and how to be more creative.

Problems can do one of two things--they can either get you down or they can give you the challenge and stimulus that makes you go forward. I hope the problems that have been discussed in the groups here will be to each of you a challenge as it is to all of us in the field of nutrition--a challenge to know our subject but also to understand people and to use the principles of learning. I suppose if I were allowed only one statement in my brief talk here I would make it this: To know our own subject but also to understand people and to use the principles of learning.

Not too long ago in one of the rather many newspapers that I read each day, I came across a poem which had this line that has stayed with me ever since: "The dreamer dies but never dies the dream." We would not be in nutrition if we did not have a dream.

Maybe I am not expressing your dream in just the words that you would put it, but possibly I am giving the same general description of your dream as I am of mine when I say we are in this nutrition field because we dream of well-nourished people--young or old, rich or poor, tall or short or medium height, or anything else, but well-nourished people who all eat and enjoy food. (There are too many of us in nutrition who are suspected of taking the enjoyment out of eating!) A dream of well-nourished people who enjoy eating food--not pills, or capsules, or concentrates, or liquids, but food products from the rich farmland of our country, food produced by agriculture and processed and distributed by a responsible food industry--and who are guided by nutritionists in their food choices. That is the dream.

Of course some people say that it is crazy to dream. Well, let us take an illustration of dreams that eventually come true. Go back to Greek mythology; was it not Icarus who fastened the wings to his body and expected to fly but the heat of the sun melted away the wings? From the time of mythology through the ages, the dream of flying persisted until in 1903 the Wright brothers finally flew the first powered airplane. It took a long time, but all through these centuries men carried the dream that they could fly and eventually they did.

It is not crazy to dream! But in the past, when any of us had an idea that sounded crazy to someone else, he would say we were just reaching for the moon--a polite way of saying we are crazy. Now we are not reaching for the moon--we have gone beyond it. The moon is no longer the ball up there that the cow jumped over in the nursery rhyme; the moon is something that has been photographed and any day now we may hear of men landing on it. That was thought to be crazy a few years ago and now it is not a dream but a reality.

Science has done its part to get man ready for the moon. Science has done its part for nutrition. Through science we know the principles of nutrition. We know the nutrients that are needed by the body. We know something of the amounts of them. We know the food sources of these nutrients. Science has done its part, and now it is up to the people. The difficulty is that people do not follow the laws of science. They react very differently.

I suggest for a moment that, as we talk about people, we look first at ourselves. You are committed to good nutrition or you would not be here. If you had not done it before, probably during this conference you immediately began to analyze, not superficially but very deeply, your own food likes and dislikes and why you have those food likes and dislikes. You have been looking at yourself more critically than ever before, I assume. At least I have been doing that for myself.

Along with analyzing our own food habits and practices, let us see what other implications there are for us. I have listed several things.

First, I think we would be very sound in our own knowledge of the science of nutrition and its application.

Second, that we be continually reading critically, analytically, keeping up to date.

Third, that we be sure that we are sound in our interpretation of the principles of nutrition--that we remember that there are many, many food patterns to choose from.

Fourth, let us remember to be free from personal prejudice or bias, and be sure that we have no food fads of our own. You know the old saying that all the world's a bit queer except thee and me and even thee is a bit queer. Let us be sure that any queerness we have does not go along with our food preferences.

And a fifth point for us to remember is that we must be enthusiastic. You cannot just go around telling people about nutrition--that it is important and that it makes a difference in one's life. It is something we have got to believe and let people know by your enthusiasm that we believe in it. And remember that enthusiasm is contagious, although many seem to be immune to this particular enthusiasm today. At least let your enthusiasm show if you want to get other people interested in nutrition.

Another point is to remember that we cannot teach nutrition but we can help individuals learn about nutrition. Also remember that these individuals do not need to know all that we know about nutrition. How many of us, when we start to teach, think we have to teach all that we know? We can help other individuals learn about nutrition--not all that we know but what each individual needs to know at the time. And we can do it with enthusiasm and with an occasional light touch.

I think you have enjoyed as much as I have the papers that have been presented at this conference and one reason was the wonderful light touch that was brought in from time to time and which so well demonstrated that you can achieve your purpose better with that light touch than just by hammering out the solid facts of nutrition all along the way.

Another implication is this: We must be prepared ourselves to learn and understand other areas or fields--to understand deeply, not superficially as some of us have been inclined to do in the past. We must understand deeply how children grow and develop and how children learn. Too many of us have been so absorbed in learning nutrition that we have forgotten some of these other related areas of knowledge.

We have looked at ourselves. Now what about some other people that we want to be committed along with ourselves? Nutrition is an exciting study. We know what its significance is in the health and the lives of people. We know that food is the one thing after air and water that is basic to survival, to existence itself. But we also know that nutrition goes far beyond that--that it influences almost everything about an individual. It influences our personality, our interest, our vigor--everything about us. Nutrition does all that, and we want other people to know it. But nutrition cannot achieve its goals if it's carried forward only by the nutritionists.

If nutrition is to achieve its goal, if we are to have healthy children--healthy through having desirable food habits, habits of eating that are as natural to them as the habit of washing behind his ears finally becomes natural to a small boy--then children need to learn about nutrition. This goal is dependent upon people and certain specific groups of people that I want to call to your attention.

These are the other people that we must have committed to our nutrition program along with ourselves:

The people in food production, the people concerned with the farm, the orchard, the field, the animals, the poultry, and all other foods; the people who produce those foods for fitness--the meat, eggs, poultry, fish, and cheese, the milk, fruits, and vegetables, the grain products.

The people who are concerned with the processing, transportation, distribution, sale, and vending of foods.

And then a third group of people--educators who have the responsibility for getting knowledge to people, the educators who know how children and adults learn, and who know that learning means doing. We need this group working with us--the educators in the schools and colleges and the school lunch program and the Extension Service and the Public Health Service, and in the home--because mother is the greatest educator of all. She is the one who gives the stimulus to the child's curiosity and encourages the child to learn.

This brings up the crucial question as to who teaches the teachers. And that of course throws a great responsibility on those who are in the colleges and universities to take a new look at the kind of teaching they are doing and at the teachers who go out into the schools and communities to teach. We need to think more about how we motivate the teacher who has not been brought up in this aura of nutrition. Well, I have something further along the way to say about this group but at this moment I am telling you of the groups of people who need to be committed along with us.

And there is another group--all those people who are concerned with communications media. I can only take time to mention this and remind you of Dr. Tyler's talk, and of the people in TV and radio, the writers of newspapers and magazines and books.

If nutrition is to achieve its goal it is going to be dependent upon these groups

of people as well as being dependent upon nutritionists. I hope you will agree that this means we need cooperation, teamwork, and coordination of effort. We should be team members, working as a team with other groups; we need to get a team spirit for nutrition.

We need to have the following groups working with us--and they are not in order of importance because everybody on a team, if it is really a team, is equally important. We need the dental profession and the medical profession--the pediatricians, the general practitioners, the specialists in teenage health problems who seem to be appearing now, and all the others in the medical and the paramedical profession. We need the whole teaching profession, the food producers and processors and distributors, those who sell and advertise, the health agencies, and the community organizations. Also on the team we need to have the policy makers, the leaders, the statesmen, and the administrators.

If we in nutrition are to get that last group and many in other groups to work with us and give their support to team work in nutrition, then we must be aware of their problems also. We should know current trends and what is happening in all these other fields so that we can understand the problems that the leaders are concerned about. We must be aware of the problems and interests of other groups if we want them to be aware of our problems and needs in nutrition education.

Those then seem to be some of the implications arising from this conference.

Now what are we going to do if we go forward in this whole area of nutrition education? What comes from this conference? I think we all want something done. Many questions came from your group discussions.

In a number of group discussions there were those who expressed an awareness and an appreciation of the impetus to nutrition education given by the inclusion of nutrition in the physical fitness program by the President's council. Some here have felt that this conference should commend that action and perhaps suggest something further on it. However, I think this can be left to the judgment of the ad hoc committee which will be meeting later this afternoon to work on the implications and important matters concerned with this conference.

From this conference it seemed to me there were four areas where we might hope to see action develop.

First, it has run very strongly through all of the conference that there is a need for nutrition teaching in the schools, particularly in the elementary schools, not as a separate subject but by teachers who know how to teach and who know the facts of nutrition gained through inservice and preservice training. That is one of the areas, I think, where we see a need to go forward.

Secondly, a need to find ways to use all mass media, especially TV and radio, continuously to carry reliable, authentic information especially to teenagers and other family members.

Third, the need for research--research in many areas but some research in methods of nutrition education--how do we get effective programs of teaching and what are the underlying principles that cause programs to succeed or fail? We need research on this, and I would hope that representatives of colleges and universities will want to remember this and perhaps get some of this research initiated when they return to the campus.

We need further research, of course, in many areas of nutrition but particularly do we need research about the influence of frequency of eating. It has been mentioned that people are eating many snacks throughout the day. We need to know whether this is desirable, undesirable, or whether it does not make any difference.

So the third area for action is in the encouragement of more research, and the fourth is in finding ways of gaining effective cooperation of all who have or should have concern for nutrition.

Now, a little more simplification about the first area, the nutrition teaching. This will need much work and planning.

We need to consider ways by which we can get all teachers to become so well informed on nutrition that they feel comfortable with it and confident in the using of it and know its significance, and can adjust to the interest level, the maturity level, the cultural patterns, and other influencing factors.

We need coordinated plans for nutrition teaching for use with children of all ages on through all grade levels, and possibly suggested guides--but only suggested ones. There is no blueprint that should be used or even that we should attempt to use with all groups. Groups are different; they are made up of individuals.

We need help on motivation for the teachers in the schools to teach nutrition, as well as motivation of another kind for the pupils to want to learn.

With regard to that second area of action that I mentioned--the use of all mass media--here we need a plan, we need some way to find how national TV programs can be continuously given good program material. I think the support of the responsible food industry and business is necessary. It means money, it means time, and it means the best writers and performers, using their skills for interpreting nutrition information to the people. We also need more publications for teenagers; this is a whole big area of need. I am just indicating some of the things that have seemed to arise from this conference.

As regards ways of gaining effective cooperation, we have national conferences, and perhaps we now need to think about regional conferences and other ways that we can spread this type of stimulus and information and involvement throughout the whole country.

I think this conference has shown that we know what we are and that we do see what we may be, despite Hamlet's words. You will leave here carrying with you memories of wonderful talks. You had many ideas. You have, I hope, renewed vigor and the feeling of reinforcement of what you are now doing. You do not have to be afraid that you are the only one trying to save the world nutritionally.

You will remember, I hope, when you get back home and you see the desk piled high with mail and examination papers and preparations for registration of students, that the good thoughts and intentions from this conference must not be allowed to slide away.

Go back with that renewed assurance that what you are doing is important. The conference has shown this very definitely. It has also shown, I think, that nutrition teaching is an ongoing process--that no generation inherits the knowledge of the preceding generation; it is there in the books, but it is never in the head. Each individual, each generation, has to learn anew for themselves. Nutrition education is going to have to go on year after year after year, and generation after generation, because each group must be taught. Keep the learning going.

Should any of you carry away a feeling of frustration--and I thought perhaps I sensed frustration in some of the discussions--remember these words from an old saying: "It is better to light one candle than to curse the darkness." We as individuals can light many candles; so keep on doing what you are doing.

AD HOC COMMITTEE MEETING, January 31, 1962

The ad hoc committee, a small group of selected conference participants, met with the program planning committee immediately after the conference to identify what appeared to be necessary areas for action. The discussion emphasized the following needs:

*To define concepts and goals appropriate for nutrition education for different age levels and for groups with various backgrounds.

*To develop more effective means of using mass media in nutrition education.

*To identify specific needs for research in nutrition education and to find means for carrying on research in these areas.

*To provide more adequately for preservice and inservice education in nutrition and in principles of learning of school personnel, health workers, nutritionists, and community leaders.

*To develop a plan for coordination of all resources for nutrition education involving groups in agriculture, education, health, food industries, and others.

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- Berenice Mallory
- Elsa Schneider
- Evelyn Spindler
- Bertha Olsen
- Thelma Dreis
- Helen Ger Olson
- Margaret Morris

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*This group met June 16, 1961 with the Program Committee to assist with program planning.

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